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Friday, 24 August 2012

Zooms vs. Primes, Part II

An Idiosyncratic, Unfair and Unscientific Comparison

By **Ctein**

Here's the question I'm exploring:

> If I'm out photographing in a situation where I could use either a zoom or a prime, at the same settings (focal length and aperture) which lens in my kit is going to give me the best image quality?

I don't care about relative size, weight, convenience, maximum aperture, or cost. If that doesn't interest you, skip the rest of this article and come back next week.

Here are the lenses I own:

- 12mm ƒ/2 Olympus M. Zuiko Digital
- 14–42mm ƒ/3.5–5.6 Olympus M. Zuiko Digital (first generation) (*NLA*) [*Here's the current version in black and silver —Ed.*]
- 20mm ƒ/1.7 Panasonic Lumix
- 45mm ƒ/1.8 Olympus M. Zuiko Digital
- 45–200mm ƒ/4–5.6 Panasonic Lumix G Vario
- 85mm ƒ/1.4 Rokinon

I did those comparisons last week.

Jeff Goggin loaned me three wide-angle zooms:

- 7–14mm ƒ/4 Olympus Zuiko Digital
- 14–35mm ƒ/2 Olympus Zuiko Digital SWD
- 14–50mm ƒ/2.8–3.5 Lumix Leica D Vario Elmarit (*NLA*)

How do Jeff's lenses compare to my own set of lenses? That's where I go now.

The 7–14mm ƒ/4 Olympus zoom beats my 12mm Olympus prime at all apertures; it's sharper over the entire field and noticeably less smeary in the corners. The 14–35mm Olympus SWD zoom (at 14mm) is also distinctly superior. On the other hand, the 12mm Olympus beats out the 14–50 Lumix (at 14 mm); they're very similar on axis but the zoom is really lousy in the corners, soft and flarey with massive lateral chromatic aberration. My 14–42mm Olympus kit zoom once again shows pretty well, being as good or better than all the lenses except the 14–35mm Olympus SWD.

At 20mm, the story is similar; the 14–35mm Olympus SWD zoom is best by far over the entire field at all apertures. As I reported last time, my 20mm Panasonic and 14–42mm Olympus kit zoom run neck-and-neck, but they both lag behind that 14–35mm wonder.

"Twenty millimeter" lenses compared at ƒ/4. These are 150%-scale sections from the centers of the frames: heavy-duty pixel-peeping. The 14–35mm ƒ/2 Olympus Zuiko Digital SWD is clearly best, and the 14–50mm ƒ/2.8–3.5 Lumix Leica D Vario Elmarit worst. The first generation 14–42mm ƒ/3.5–5.6 Olympus M. Zuiko Digital and 20mm ƒ/1.7 Panasonic Lumix are very similar and fall between the two other zooms.

At the edges of the frames, the rankings don't change, but the differences are more pronounced. In these photos, the 20mm Lumix looks better than the 14–42 Olympus, but in most comparison sets the Olympus comes out a bit better. At this level of pixel-peeping, there can be substantial frame-to-frame variation, so a tester needs to look at several comparison sets before passing judgement.

And, still taking up the rear is the 14–50mm Lumix zoom—weak in the center and really lousy at the corners.

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Finally we get to the 45's. Not unexpectedly, my 45mm Olympus prime took top honors in most photographs at most apertures, center and corner. Surprisingly, though, the Lumix 14–50mm zoom finally came through and performed nearly as well as that prime. Both of my zooms took up the rear, although the 45–200mm Panasonic wasn't much worse.

Takeaways

What did I learn from all of this? Well, my 14–42mm Olympus kit zoom is a much better lens than I thought. At short and medium focal points, there's no reason to take it off my camera for another lens, although it loses it at the long end of its range. I definitely shouldn't use my 12mm Olympus instead of the kit zoom unless I need the extra coverage.

'This trashes most of the rules of thumb I'd use for picking a lens'

My 45mm Olympus prime remains the big winner, but if I've got my 45–200mm Panasonic zoom on the camera I'm not really going to lose very much leaving it there (aside from the serious light falloff at $f/4$ that I mentioned last column). And that 85mm Rokinon turned out to be a real surprise, a superior lens at moderate apertures.

As for Jeff's zooms? The clear winner is the 14–35mm $f/2$ Olympus Zuiko Digital SWD, which appears to match or beat just about any other lens over its focal range. If I only wanted to be carrying one fast lens that would cover everything from moderate wide-angle to short tele, that would be it. Assuming that I didn't mind that it was huge (damn thing weighs nearly a kilo) and hugely pricey (north of two grand—*eep*).

Overall, this trashes most of the rules of thumb I'd use for picking a lens. Cheap lenses can be very good, kit zooms can be better than pricey primes, fast zooms can be great, and there's no way to predict without testing over what part of its focal length range a zoom will be especially good or bad.

Ctein

Columnist Ctein peers deeply into various mysteries weekly on TOP, usually on Wednesday. ('Steamed Editor was behind this week.)

Posted on Friday, 24 August 2012 at 01:39 PM in Ctein, Lenses | Permalink

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Comments

Thanks, Ctein. Interesting stuff. But doesn't image quality and character relate to more than perceived sharpness --for example, field flatness, smoothness of tonal transition, color rendition, and out-of-focus rendering. It seems to me that these contribute as much to a pleasing image as sharpness does. (Of course, one of my favorite lenses is fifty years old and permanently attached to its camera.)

Posted by: Bill Poole | Friday, 24 August 2012 at 02:39 PM

The results of your testing underscore the difficulty of purchasing equipment in what's become a mail-order market for all but urban buyers in the largest cities.

It's no wonder that testing and review sites like photozone, dxomark, dpreview, etc. are so popular. In the absence of knowledgeable personal recommendations or the ability to borrow a lens for a week or so, I've spent many hours on the web, working toward analysis paralysis with MTF charts and 100% crops, attempting to read between the lines...

I'm not a m43 shooter, so in a specific sense, your tests are irrelevant to me. In a general sense though, they confirm something I've known for a long time; that rules of thumb are never enough.

Posted by: Dave R. | Friday, 24 August 2012 at 03:05 PM

Well, one rule of thumb not trashed: Olympus has some pretty good lens designers!

Posted by: Dave Karp | Friday, 24 August 2012 at 03:10 PM

This kind of makes me wonder how the Lumix 12-35 I just ordered will stack up against the rest of this field...

Posted by: geoff | Friday, 24 August 2012 at 03:17 PM

We always say the best equipment is the one you use.
To me, the primes vs. zooms battle is won easily by the primes, not because of IQ, but because the way I behave when I use them.

When I use a zoom lens I tend to compose from wherever I am and don't move an inch.
But when I compose a picture with a prime lens, I have to zoom in and out with the lowest tech equipment: my feet. The second I move, I'm on "photo mode".
I'm more careful and thorough when using primes. Right or wrong, that's just the way I am.

Posted by: Gaspar Heurtley | Friday, 24 August 2012 at 03:29 PM

Well, interesting to see the image-based approach to this, with

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Last year I did it the numerical way - designed my own test-"chart" on a sheet of A4, pointed a handful of lenses at it and calculated standard-deviations of the luminosity channel as a measure of sharpness in a noddy Python script, against aperture. The results were not surprising - both my primes (good old adapted-M42 stuff off ebay) exhibited peaks around f/4.5-f/5, dropping off again afterwards such that the Panasonic 14-42mm kit zoom actually beat them from f/8 and definitely f/11 onwards. So for me, the choice of lenses breaks down as closeup=prime, landscape=kit zoom (shame about the ludicrous distortion though - stand at the end of a street with tall buildings and pan vertically downwards and you can see the most amazing barrel distortion).

Either way, though, the answer to `which lens will give me the best quality' is `the one that you choose based on profiling in advance' :)

Posted by: Tim | Friday, 24 August 2012 at 03:32 PM

Interesting results.. But since you label this as an "An Idiosyncratic, Unfair and Unscientific Comparison", then there's one rule of thumb of mine that overrides what is rated as good or bad.

I just don't like working with a zoom lens.

Even when I was still shooting with mFT and SLRs, I sold off all my zooms for primes and found I made better photographs. Regardless of the tested performance or spec, I've found this to be true over and over again through however many systems I've used.

I'm reconciled to it now. I don't buy zoom lenses anymore, and indeed I find myself using just one or two primes to he exclusion of everything else. And don't miss the others. Soon, it seems, I'll have nothing but a good fast prime normal lens and be perfectly happy.

So much for having an interchangeable lens camera... :-)

Posted by: Godfrey | Friday, 24 August 2012 at 03:43 PM

This has been very interesting, Ctein. Thank you for doing the work.

The whole primes-purism -vs- zoom convenience has been a topic since ... you were clean-shaven! ;-) I have long maintained that computing horsepower increases + more advanced optical material formulations / research have made the issue hardly worth discussing. My own casual idle-time tests have confirmed it to my satisfaction. Now your slightly more structured inspections have confirmed my observations.

Another case in point. Last week I got a copy of Panasonic's new Lumix G Vario 12-35mm F2.8 ASPH. micro four-thirds lens, the first such zoom to offer a constant aperture through its range. Although pricey I wanted to see if I could basically glue the thing to my OM-D, with its ever-so-handy 24-70mm 35mm-equivalent range.

The answer: Yup, it's fabulous. Case in point: I shot this image (click the image to enlarge) with the lens at 16mm, f/8 and its edges retained plenty of detail. It was certainly as good a result as I would have expected from a similar prime.

When zooms were new they certainly lagged good primes in speed, wall-to-wall sharpness, and color/contrast. But that was 40+ years ago. Zoom lenses today are often technically just as good as prime lenses.

Posted by: Kenneth Tanaka | Friday, 24 August 2012 at 04:04 PM

I did a similar test, with a similar group of lenses, and the overall winner was the Panasonic 14-45 kit lens that came with a (now sold) Pany G1.

It beat out some much more expensive lenses, and it's pretty much welded to my OMD now, although I carry the 45mm f1.8 just 'cause I like it so much.

Posted by: Paris | Friday, 24 August 2012 at 04:35 PM

But really, shouldn't this post be titled "These particular zooms vs. these particular primes?" The most you can generalize from all this is that not all primes outperform all zooms.

Posted by: Joe | Friday, 24 August 2012 at 04:52 PM

Now you've gone and done it... Now I've just got to buy the 7-14mm... Damn!

Posted by: Ben | Friday, 24 August 2012 at 06:07 PM

What about distortion?
Decent zooms have been sharp for years, but I find I can't use wide zooms to shoot anything with straight lines.

I know distortion can be fixed in post, but then you lose a noticeable amount of coverage, and you lose some sharpness. This makes composition harder. I end-up framing a little wider, which leads to even more distortion, which leads to more image loss in post.

This of course leads to the purchase of a new camera with more pixels (so you have more to throw away), but then I feel bad about the fact that I'm only getting 12mp photos out of a 16mp sensor...

In the end, I find it easier, cheaper and lighter to get a prime or two, and to adjust my framing the old fashioned way, with my feet.

Posted by: Bernard | Friday, 24 August 2012 at 06:32 PM

Have you looked at barrel/pincushion distortion? I usually have found that with zoom lenses, and particularly tele-wide zooms like 24-135mm types or thereabouts for 35mm, the tradeoff is between flatness of field and distortion, particularly at the extremes of the zoom range, so you can have a zoom with sharp corners or straight lines, but not both without spending the kind of money that goes into high-end cine lenses.

So I've liked tele-wide zooms for things like event photography, where I'm photographing people without particular concern for having a rectilinear background, and it's not always easy to stand in the ideal position to catch a good expression or action, but you still want to use the full frame as much as possible. Otherwise, I don't use zoom lenses at all.

Posted by: David A. Goldfarb | Friday, 24 August 2012 at 06:53 PM

Dear Bill,

Unfortunately, of necessity, in a 1000-word article including umpteen different comparisons, each comparison isn't going to get more than a sentence. I can only highlight what I think is the most significant difference. That doesn't mean there weren't others or that other factors weren't considered. Anything that didn't make a noticeable difference in the quality of the image to me isn't going to get mentioned at all.

Channeling Martin Rees, in a kiloword article, you can never, ever assume that absence of evidence implies evidence of absence.

As side issues:

1) Field flatness is not per se relevant except as it affects sharpness unless you're doing copy work. As is probably obvious, I didn't test ANY of the lenses for that specialized application.

2) In the days of film, and of poorer optical glass, lens color rendition could be important. Today, honestly, it's almost an irrelevancy, except for certain narrow specialized situations.

~~~~~~

Dear Gaspar,

If you can't be with the lens you love, Gaspar, love the lens you're with.

~~~~~~

Dear Dave K.,

Well, I trashed that in my review of their 12 mm f/2. Overall, it is not a good design.

~~~~~~

Dear Joe,

Want to know what you can generalize from my article?

That you can't.

Period.

pax \ Ctein
[Please excuse any word-salad. MacSpeech in training!]
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Posted by: ctein | Friday, 24 August 2012 at 07:45 PM

@ Bill Poole:

I agree that "image quality and character relate to more than perceived sharpness." In this case, while I basically agree with Ctein's analysis and appreciate the 14-35's resolution and sharpness, my personal favorite of these three 4/3-format zooms is the PanaLeica 14-50.

In fact, if I had to pick just one to use now and forever, without a doubt, the 14-50 would be my choice, as it's small and light enough to balance well on an m4/3 body, is reasonably fast at f2.8 on the short end, and resolves well enough to make very nice 12x16 prints.

Posted by: Jeffrey Goggin | Friday, 24 August 2012 at 07:53 PM

Thanks again, Ctein, for doing all the work and sharing your observations. As to the comments about sharpness vs other attributes, my stance is to start with sharpness and if a lens can't deliver that, the rest does not matter (to me!). Then I look at barrel distortion, as architecture is a prime subject for me. Wide-normal zooms can be designed to have little barrel distortion. The Pentax 55-100mm zoom I use on my Pentax 67 is a case in point. Sharp across the field and rectilinear. The ideal lens for architectural interiors.

@ Gunther: you can train yourself out of your bad habits. ;-) Learn to find the point at which you want all the form/content to relate to each other, then without lifting the camera to your eye, frame your left/right or top/bottom edges. Then lift the camera and set the zoom to match. That's how I do interiors, where you often have limited room for zooming with your feet.

Posted by: Jim Simmons | Friday, 24 August 2012 at 08:16 PM

Hi Ctein,

Do you wonder sometimes whether camera companies just KNOW someone will buy a prime lens made of metal for $2000 and then extol its virtues widely even if they only spent $1000 on the optical formula...

Just putting it out there :)
~~~~~~

Posted by: Steve Jacob | Friday, 24 August 2012 at 08:18 PM

Thanks Ctein, I think it's time I bought the 45mm.

Just one question though - if size and weight aren't a factor why shoot m4/3rds at all? Wouldn't a larger format give you enough redundancy that you just wouldn't have to worry about it?

(I know that's not the point of the article, just wondering your thoughts)

Posted by: Mart | Friday, 24 August 2012 at 08:26 PM

"Well, one rule of thumb not trashed: Olympus has some pretty good lens designers!
Posted by: Dave Karp"

They market the 7-14, 14-35, and 35-100,4/3rds lenses as 'SHG'(super high grade),for a reason!
There is still some truth, in some advertising. ;-)

Posted by: David H | Friday, 24 August 2012 at 08:46 PM

Dear David and Bernard,

I'm only concerned with geometric distortion to the extent that correcting for it (which is now routine in software) degrades image quality.

So far the only lens I've played with where this is a significant factor is the Olympus 12mm f/2. The designers allowed such excessive distortion that there's visible degradation of image quality at the edges of the field when it's corrected. It's especially distracting, because it's a streaky smearing (that could be mistaken for coma or astigmatism) that is rather more noticeable than a symmetric loss of sharpness.

So far as I'm concerned, software correction of aberrations is just as good as hardware correction. In lens design you are always trading off correcting one aberration against another. There are a limited number of “control knobs” you have available to tweak and you can't zero everything out everywhere under all conditions.. Bringing software into the mix merely adds one more tool to the lens designers' arsenal.

In my tests for these articles, I did not try to ferret out what specific lens defects produced what kind of image results. I could have, but I didn't care. All I cared about was what the pictures looked like.

As I said to Bill, flatness of field, per se, is an irrelevancy unless you're doing copy work. In ordinary photography, curvature of field shows up as poor focus in areas that you expect to be sharp. Again, just part of the mix of how good the image looks. For all I know, the poor showing of the Lumix 14-50 at lesser focal lengths could have been due to severe curvature of field. I don't really know and I don't really care. I just know it looked bad at the edges.

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Posted by: ctein | Friday, 24 August 2012 at 09:08 PM

I'd like to mention that working with a prime instead of a zoom usually results in better photographs because the photographer 1)doesn't have to take the time to consider what focal length to shoot at, getting the shot quicker, and 2)the photographer, in working with the fixed focal length, has usually gained a feel for that focal length and has seen and composed the shot before even lifting the camera. The differences resulting from working with primes lenses as opposed to zooms in this respect are far more apparent than minute differences in 100% sharpness.

Posted by: Poagao | Friday, 24 August 2012 at 09:11 PM

PS to David and Bernard,

Just realized I didn't directly answer your question. The answer is that after automatic software correction, none of the lenses I tested showed any significant amount of visible geometric distortion at any focal lengths. Also, the majority looked very good in the corners on an absolute basis, so what software correction was going on was not hugely degrading image quality.

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Posted by: ctein | Friday, 24 August 2012 at 09:25 PM

Can we have a bokeh analysis?

Posted by: Don | Friday, 24 August 2012 at 09:35 PM

I think the story here is that Olympus needs a proper 4/3 DSLR for the 14-35 f/2. The 12-60 also has a stellar reputation. Why is it that the lenses I want never match the camera? I miss the old days when all you needed was a light tight box with a shutter.

Posted by: Andrew | Friday, 24 August 2012 at 10:11 PM

Goldfarb: Most of the distortion is corrected by software in the camera for the µ4/3 lenses. Which BTW was the subject of much whining on the web when this became relatively well known. I think most agreed that it didn't matter as long as the resulting image was acceptable.

Posted by: Greg | Friday, 24 August 2012 at 11:01 PM

Dear Mart,

"Wouldn't a larger format give you enough redundancy ..."

That sentence makes no sense to me whatsoever.

Regarding size and weight, you've taken a phrase out of context. I was merely reminding people of all the factors that were not coming into consideration in this analysis. That's nothing like the difference in weight between entirely different format systems.

~~~~~~

Dear Poagao,

You know your own work, so I must accept what you say as being true for you. I can assure you it's not true for me and my work.

~~~~~~

Dear Don,

No.

Think about it. All of the comparisons, of necessity, are at moderate to small apertures. Most of them are of wide to moderate focal length lenses. None of them are particularly close-up photographs, because when I'm out walking around, that's not a predominant part of what I will be photographing. Bokeh just doesn't enter into it.

~~~~~~

Dear Andrew,

What's wrong with the OMD?

If you're complaining about the lack of an optical viewfinder, that's simply not permitted within the specifications for micro four thirds. If that's what you mean by a “proper DSLR" that it's like saying a proper Nikon should have full bellows movements.

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Posted by: ctein | Saturday, 25 August 2012 at 01:07 AM

A side question. Is the micro-four-thirds 14-42 Olympus kit lens optically similar to the older four-thirds version?

That (the four thirds version) was the first lens I started out with. Didn't pay much attention to it in the beginning. But over time, as I was exposed to other lenses, I started suspecting that the Olympus kit lens might be more than a run-of-the-mill kit zoom.

Beginner's luck!

Posted by: Zeeman | Saturday, 25 August 2012 at 01:08 AM

@Poagao, Just to prove there are no absolutes and everyone's needs differ, for me using my primes results in better shots because it demands slow working. Using my my 16/24/45/90 TS-E set for architectural work both demand a tripod and it is undoubtedly the slowest possible way to work in 35mm format.

Posted by: Barry Reid | Saturday, 25 August 2012 at 02:51 AM

Thanks for this, very interesting.

I have the panasonic 14-50mm 2.8-3.5 and it is my favourite lens by far. Excellent flare resistance, and my copy seems to be very sharp, with very good colour.

I also have the Zuiko 12-60mm. Its very sharp, but flare resistance is not as good, and I feel the 14-50mm just produces better pictures. (Especially for portraits with out of focus areas). The 12mm is great for street and landscape photos. I prefer the output of the 11-22mm. The 12-60mm is great for convience and a wall around lens.

Whats most interesting is that I find the m.zuiko 14-42mm (original) to be very good and have good contrast/colour redition. Maybe its the new coatings. Also the m.zuiko 40-150mm.

I would rate the apparent sharpness of the 14-50mm above the 14-42mm. No scientific testing, just impression. Most of my photos are taken at f7.1.

Thanks for the interesting post.

Posted by: Kckelleher | Saturday, 25 August 2012 at 04:26 AM
~~~~~~

A little while ago, Mike mentioned that Ctein had a new camera body in hand. Count me among the many who are eagerly looking forward to his idiosyncratic, unscientific overview of said camera. I'll take an actual photographer talking about a piece of equipment in the context of his/her work over pages of mind-numbing test charts and graphs any day.

Posted by: Ed Grossman | Saturday, 25 August 2012 at 05:20 AM

...all very interesting...it's occurred to me that when I read reviews of lenses affixed to cameras, especially all these crazy-ranged super zooms that have the equivalent of 24mm's to 400-something mm's, they always seem to fall apart on the long end, sometimes being almost unusable; so why even make them except to sell. My buddy who shot video for years says zooms always have "something" going on. Either one side of the range is soft or the other is, or none are as wide as you would like them and you have to use a very expensive multi-element filter to "shorten" the lens. Computer design and rare glass selection may help us out here, but it's interesting to me how a zoom with 14 elements is sharp compared to a single focal length lens, sometimes with 9 or 10 elements, and only one focal length to cover.

I've always wondered how much correction is actually going on in the camera, as traditionally zooms were never as sharp as a well-made single focal length lens. There may be those that object to that statement and say that's not true, but even in the closing days of 35mm film, zooms were rarely as sharp, it's just that grain pattern and enlargement degradation disguised a lot of it: if you looked at the specs, they were never as sharp. BTW, my sisters response to this statement is "who cares if it's electronic or optical, as long as it's sharp". And maybe that's the idea.

I know Ctein mentioned that this article was about nothing but relative performance, focal length to focal length, but (yeah, I'm not supposed to say it according to the statement at the top), nothing can get me away from a small lens on a bigger camera body, if you're hand-holding, and I don't care about anti-vibe, that's the way to go! Nix on "coffee-can" lens sizes. Also as an assignments photographer, I'm not walking around trying to capture the decisive moment, I'm working with an art director to capture and image they want. Part of my lighting, and selecting the exact angle of the shot in the location, is selecting the lens I'm using an where I'll be standing; so I don't care about zooming at all. I never need to shoot something at 37.8mm's!

Which brings me to a usable zoom for me. I've never understood the 24-70mm f/2.8 "pro" zoom. I must be an easy zoom to make. Everything over 50mm is useless to me. I need a slight wide angle to portrait telephoto. I would be way better off with an equivalent 35mm to 85mm, this would cover 90% of my uses, and Tamron used to make a sharp 35-85 that was little bigger than a 50mm 1.4. I'm very interested in the new Nikon VR 24-85 for 500 bucks, but still wish someone made a 20-60 for APS-C, think of how small it could be! Keep it a small zoom range, and keep it a small zoom, and sharp!

Posted by: Tom Kwas | Saturday, 25 August 2012 at 07:55 AM

Your findings don't surprise. I would think that now days 90% of lens R&D money is spent on development of zoom lenses. That is where the sales are. A photographer depending on his work to feed the family would not put up with poor quality, either mechanical or optical. This would be especially true if he has to pay $2000+ for a top grade lens.

Posted by: John Robison | Saturday, 25 August 2012 at 08:39 AM

Ctein said:

"As I said to Bill, flatness of field, per se, is an irrelevancy unless you're doing copy work. "

Em, architectural work? I like my facades to be in focus.

NB, am I the only one that thinks all these edge crops look pretty bad?

Posted by: Richard Tugwell | Saturday, 25 August 2012 at 09:32 AM

@ Poagao: *"I'd like to mention that working with a prime instead of a zoom usually results in better photographs.... The differences resulting from working with primes lenses as opposed to zooms in this respect are far more apparent than minute differences in 100% sharpness."*

This opinion actually dates back to the ancient Egyptians and can be found in the hieroglyphs of royalty tombs. (In fact, King Tutankhamun was found only with primes, no zooms for snapping in the afterlife.)

OK, I'm silly this morning. But it really is a long-standing opinion that has some basis in valid observations.

In fact, the most common reason why some types of "prime" images are "better" than similar "zoom" images tends to be quite simple, particularly with regard to candid photographs of *people*: **the prime shooter usually has to get closer to his subject.** He becomes more engaged with his subject. Shooting with a shorter focal length at closer range to subjects also creates a greater sense of depth than the flattening effect that a telephoto shot presents.

So why don't press photographers use primes? Well, because they can't usually control their distance to subjects. But you'll note that many often use wide zooms (16-35, 17-40, 24-70) and still get as close as possible to their subjects, basically using that zoomer as if it was a prime.

So the rationale for your own observation may be different. But close-range engagement and image depth have become the somewhat accepted explanations why King Tut's shots were so terrific!

Posted by: Kenneth Tanaka | Saturday, 25 August 2012 at 09:52 AM

Could this be because the prime lenses on M4/3's cameras are optimised for small size, which is less of a consideration with going-to-be-comparatively-large-anyway zooms?

Posted by: Nico Burns | Saturday, 25 August 2012 at 10:02 AM

Ctein,

How much practical significance do you think there is in the quality difference you've found? For example, the examples in your article show differences at 150%--"heavy duty pixel peeping" territory, as you say--but would they be discernable in 15x20 inch prints (which I generally think of as about the equivalent of 50% viewing on-screen) in normal (ie., unmagnified) viewing conditions?

Posted by: cmp | Saturday, 25 August 2012 at 10:46 AM

Besides the price, the main problem with the f/2 zoom is that it totally defeats the purpose of carrying a smaller, lighter camera system. If that is not a photographic priority, it makes so much more sense to put your money into a bigger sensor. Especially on the wide end.

Posted by: robin | Saturday, 25 August 2012 at 10:49 AM

Dear Tom K,

"...traditionally zooms were never as sharp as a well-made single focal length lens."

Possibly so, in the past, but it is definitely not true among the nine micro four thirds lenses I tested. And let's not forget that the very best lens, over its entire focal range, was a zoom, and that was in comparison to other lenses that are generally considered to be well designed and made. Which leads me to...

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Dear folks,

Let me, again, correct a number of broad misconceptions. The big one is that I was looking at resolution and ignoring everything else. No, it's just that most of the important differences I saw between the lenses were in their rendition of fine detail (not the same as resolution or even sharpness). Except in the few cases noted, differences in flare, contrast, etc. were small compared to those.

That was a bit of a surprise to me, but it doesn't make it any less true. Even with the Rokinon 85 mm, which is a notably flarey lens as I reported in my original review, it has turned out to make far less difference in practice that I expected. Maybe if I were routinely photographing heavily backlit subjects or stage lighting it would be different.

In modern digital photography, slight differences in overall flare or contrast are no more important than slight differences in overall color rendition. You won't notice it in individual photographs, and if you're trying to produce a matched series from a few different lenses, it's easy enough to batch correct for this in software. If the flare is bad enough, it can visibly degrade the shadows, but if that's not evident in the photograph an overall modest difference in contrast between two lenses is just an aesthetic consideration, not a make-or-break matter.

Look at the four lenses illustrated in this article (all the files were processed exactly the same way). If you've got a good eye for that sort of thing, you can indeed see subtle differences in contrast, flare, and color rendition between them. But they are obviously pretty small and obviously correctable in postprocessing. Whereas there are really big differences in how the fine detail is rendered. So, that's what I reported on in my limited available space.

There's another implicit misconception going on, that you're going to have a modern lens that is truly great in some optical characteristic and terrible in others. That is, some people's thinking seems to be going along the lines of, “Well, Ctein may have emphasized resolution [I didn't, but for the sake of argument...] but that doesn't mean the lens had good micro contrast, overall contrast, freedom from aberrations, etc.” That's not the way it typically works with modern lenses. It's not like they'll get an A in one characteristic and C's everything else. I'm not saying it can't happen, I am saying it's very much not the general rule.

Finally, the generalization that zooms are weak in any particular part of their focal range (or even anywhere), doesn't hold. For each generalization you can come up with, at least one of the lenses I reported on here breaks it. In fact, usually more than one lens. Those general beliefs, many of which I held to until I ran these tests, fail so often that I think they're just holdovers from lens designs of decades ago. I had a Vivitar Series 1 24-70 zoom, considered quite good at the time. it certainly fit the clichés: excessive light falloff wide open but very sharp and crisp, contrast got notably soft at the tele end, etc. Thing is, that was a 25-year-old design. Lens design has changed. The old wisdom is no longer wise.

And, most importantly of all, any particular lens you own is likely to break the rules. So, you really need to know how your lens performs to figure out what its strong and weak points are.
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Posted by: ctein | Saturday, 25 August 2012 at 02:45 PM

Well, I said pretty good, not perfect. :-)

Posted by: Dave Karp | Saturday, 25 August 2012 at 04:15 PM

Ctein, sorry, I don't like your conclusions, and even more I don't like your presumptions. Why on Earth a lens must be 'tact sharp' all across everything to deliver 'best results', or, then to be blesses by its sacred place in your purse?

By those standards of yours, my FA43 for Pentax is a dinosaur, and ready for dust bin. Yet I haven't met a single person who owns it and thinking about selling it. Even designer who made it claims the sharpness WAS NOT his goal but some aesthetics that are purely artistic, and belong into an emotional layer often hard to define.

Which on a Procrustes' bed of sharpness of yours would, undoubtedly, be decapitated as such.

Posted by: Zvonimir MW Tosic | Saturday, 25 August 2012 at 05:02 PM

The comments here bring to mind something I've wondered before: why do zooms always cover a broad range of focal lengths? What I'd personally like is a 32-38mm or something like that. I can imagine someone else wanting a 78-92mm. The "zoom with your feet" trope is a little misleading because you can't change focal length with your feet, you can only change the position of objects relative to one another in the frame--not something you always want to do. I frequently find myself wishing I could go just a bit wider or longer without backing up or stepping forward. Am I crazy?

Posted by: Nick | Saturday, 25 August 2012 at 05:50 PM

"The comments here bring to mind something I've wondered before: why do zooms always cover a broad range of focal lengths? What I'd personally like is a 32-38mm or something like that."

Nick,
I think the only one to ever do that was Pentax, and it never made it out of the prototype stage. I can't remember the exact focal length range of that lens, though.

Mike

Posted by: Mike Johnston | Saturday, 25 August 2012 at 06:50 PM

"'The comments here bring to mind something I've wondered before: why do zooms always cover a broad range of focal lengths? What I'd personally like is a 32-38mm or something like that.'

Nick,
I think the only one to ever do that was Pentax, and it never made it out of the prototype stage. I can't remember the exact focal length range of that lens, though."

Actually, Leica has done it. Many people don't realize their 16-18-21 Wide-Angle Tri-Elmar (aka "W.A.T.E.") is a zoom lens and can be used in between the 16mm, 18mm, and 21mm settings.

For my purposes, it would work quite well with my X-Pro1, as it would be effectively a 24-32 zoom, which would cover perhaps 80% of my photos.

Alas, its price borders on breathaking, even used, and this is coming from somebody who owns a medium-format digital outfit, which aren't exactly known for being budget friendly!

Posted by: Jeffrey Goggin | Saturday, 25 August 2012 at 07:17 PM

Nick,

Sounds like you need a little Leica Tri-Elmar in your camera life.

Posted by: Kenneth Tanaka | Saturday, 25 August 2012 at 07:31 PM

So, Ctein, what's your specific conclusion? How does this change your equipment strategy? Are you going to sell the 12 and 20 to fund one of those pricy zooms?

Posted by: Timprov | Saturday, 25 August 2012 at 07:55 PM

Hi Ctein. I agree with you about the 14-42mm kit lens. I've been using it in conjunction with an E-PL1 for over a year. No complaints. I've been able to coax crisp and colorful 9 X 12 prints from that combo. More importantly, it's a great little rig for capturing life as it happens: http://goo.gl/VA1D6

Posted by: Bob Rosinsky | Saturday, 25 August 2012 at 11:11 PM

Dear Richard,

You're right, close-in architectural work, especially when you are limited in how much you could stop down, would fall into the same category. In the general case, though, that's still rather specialized work, so I don't think we're in disagreement.

More importantly, I believe you and I would agree that as real photographers, rather than reviewers, we don't really care why a lens looks shmeary. As I mentioned in a previous post, the problem with the Lumix 14-50 might very well be due to curvature of field. Or it might be poorly corrected spherical aberration, or coma and astigmatism. Would either of us really care, in practice? No, I suspect we both would just look at that lens and say, " Blehh, shmear" and move on.

Of course, when I'm writing a proper lens review (which this isn't), I try to dissect this stuff so I can explain to the readership why a lens is behaving the way it is. But personally, I only care about how the photos look.

Regarding the appearance of those edges, keep in mind that you're looking at up-sampled data, not native camera output. It's impossible for it to be pixel-sharp. The reason I did that is because, as illustrations, I wanted the differences to be clearly visible. At a mere 100% magnification, on-screen, they were much harder to see.

By way of reference, if you were seeing the whole photograph on your screen, it would be approximately 40" x 50" (putting it into civilized units, 100 x 125 cm). Printed out at my usual image area of 15" x 20" (40 x 50 cm) the three better lenses would look quite good, even by my fussy standards. The Lumix, I don't think that would quite make my grade. But Jeff Goggin, who has a fussy eye of his own, is quite happy with it. ' Course, this could be one of those cases of, "Love the lens you're with."

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Posted by: ctein | Saturday, 25 August 2012 at 11:14 PM

Dear Zvonimir,

You misunderstand my presumptions and my criteria. You might want to reread both articles and my appended comments again.

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Dear Robin,

Funny you should bring that up. After writing my column, I was discussing this with Mike via e-mail, and I realized I had dismissed that honking big and costly zoom a bit too cavalierly. I could make a case for that lens. Mount it on something like the OMD and make that one's sole kit. You're covered from the equivalent of 28mm to 70mm with superb quality and plenty of speed. Despite the huge size and cost, it's still gonna weigh less and run less money than a full frame camera with three prime lenses, and it's gonna produce overall similar image quality. (In truth, if it weren't for the great kit zoom, it wouldn't even run much more money in u-4/3.)

In other words, if you want the same functionality that that lens provides from discrete optics, especially in a larger format camera, you're not going to save any money or weight.

Still too rich for my blood, but it has its place.

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Posted by: ctein | Saturday, 25 August 2012 at 11:24 PM

Whilst the outcomes of Cteins' test results are perhaps a little surprising and contradictory to accepted wisdom maybe we should not be too surprised. Ultimately manufacturers probably put far more development into their zoom lenses than their fixed options, which in many cases are old and largely stagnent designs that have been cosmetically warmed over to keep them current and selling. Not saying that apples to the particular optics here but it is certainly true of much of what is on offer.

It kind of makes sense that a zoom designed to cover a reasonably wide focal length range may indeed be quite excellent at some point within that range providing it is well made. Everything else may be a little compromised outside that point but the good news is the zoom could well be cheaper than the fixie.

Anyhow I have quite a few zooms and fixed focal length lenses for my Sony gear and have found many times that the zooms can provide better performance.

Basically I treat zooms as fixed focal length lenses with some framing flexibility, that being the case I have a 28-85 that is actually a 32mm, an 18-55 that's a 26mm, a stellar 42mm lens that looks remarkably like a Minolta 24-50 f4 .....oh wait it is a 24-50. And nicest of all a 35-70 that happens to be a perfect 50mm with close focus ability that is hardly any bigger than a regular 50mm lens.

Of course like Ctein we need to test ourseleves to find out this stuff, it's not something normally mentioned in the manufactures sales materials or even on review sites for that matter.

Posted by: Brad Nichol | Saturday, 25 August 2012 at 11:27 PM
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My new Olympus OM-D E-M5 just arrived, with a 12-50mm zoom & 17mm pancake. I wanted a lightweight alternative to my Canon 5D MkII that I would have with me all the time. I wanted a small camera, and a pancake lens, so I would seem non-threatening doing street photography or taking pictures at events. I like the tilting back monitor, for taking overhead photos or very low viewpoints. Since I'm interested in abandoned structures and demolition / construction sites, I've been thinking about stilts, but the tilting back monitor is a simpler solution.

I was astounded when I removed the body cap, to find the sensor so near ... well, what did I expect? :-)

I'm pissed at Olympus for creating their own raw format. USE DNG! USE DNG! USE DNG! The more people who support and use DNG, the more permanent it becomes; ORF will never be supported by anyone else, except barking seals: ORF! ORF!

I suppose they have to provide that crappy software, so people aren't "forced" to buy LR / Aperture / PS, having already spent $1700 on a camera and two lenses. Why not support GIMP? Then the software improves whether Olympus does anything or not.

I put up my first-day photos, shot in P, on my pic-a-day blog: http://www.tlegrady.com/2012/08/25/olympus-om-d-first-pics/

They won't change the world, but the pictures demonstrate that auto-mode pictures can be processed into something half-decent, and that there might be a future to taking the camera away from the photographer's eye, whether to waist level or to high overhead or far below.

Of course, it was AFTER my purchase arrived that I found a review from LensRentals of wide-angle MFT lenses, which claims my Olympus 17mm is the worst choice of everything available :-(... well, I'm not traumatized by today's pictures .... maybe I'll stick with it, and maybe I'll consider the Pana 17mm instead.

http://www.lensrentals.com/blog/2012/08/mirrorless-mirrorless-on-the-wall-part-i

Tom

Posted by: Tom Legrady | Saturday, 25 August 2012 at 11:44 PM

I think a lot depends on how you use your zoom. There are (at least) two ways...

1. Zoom to frame the shot, while you (by choice or necessity) remain stationary.

2. Set your zoom to 35mm / 50mm / whatever gives you the desired angle of view, and then walk to the right spot to frame the shot.

If you use the 2nd approach, you can retain the single focal length clear-headedness that prime shooters like — without the time and hassle of changing lenses.

BTW, I recall reading somewhere that Olympus 14-35 f/2.0 is so good, it's earned the moniker "a pocket full of primes".

Posted by: Edgar Matias | Sunday, 26 August 2012 at 12:26 AM

"The "zoom with your feet" trope is a little misleading because you can't change focal length with your feet, you can only change the position of objects relative to one another in the frame--not something you always want to do."

@Nick: Thank you! Always my pet peeve. I generally prefer primes, but not because I can zoom with my feet. In addition, to what you mentioned, zooming with your feet can get you run over by a truck or chewed on by a grizzly bar.

Posted by: David Hufford, formerly known as David H. | Sunday, 26 August 2012 at 03:52 AM

Thank you Ctein for your findings. Your article urges me to do more comparison between MY lenses and for the type of shot I'll do. I learned that looking at charts on the web about a particular lens is not that useful. First there are sample variations and second you don't know what does it mean 1500 LW/PH in the corners and more importantly how it LOOK like.

That's why even before your first article I decided to compare the Panasonic GH2 + DG 25mm f/1.4 vs the Pentax K-5 + FA 35mm f/2. I wanted to know if I could get good results in low-light in short to medium distances. I reasoned that the K-5 has about 1 stop more performance for ISO noise that would compensate for the relative slowness of the lens compared to the Panasonic. I started to shoot 2 pictures in succession with each camera. Remarkably they were very similar in noise, dof, sharpness characteristics as long as I kept the lenses 1 stop apart. But then I realized 2 interesting things. First the EVF is more enjoyable in low-light (at least the one on the GH2) and the focus was easier and more accurate on the GH2. So even if the K-5 had (much) better handling and stabilization, I'm slightly more confident in the GH2 to get the picture at these focal length in low-light. Sharpness differences in this case was not that important.

So Ctein your article just come at the right time to push me to do further tests between cameras, lenses etc. I honestly don't like to spend too much time on tests but after many shoots where I was not quite satisfied with the results, I think they are required to build confidence in your gear.

Posted by: Emmanuel Huybrechts | Sunday, 26 August 2012 at 07:19 AM

Mike,

I believe the Pentax lens you are referring to is this one: http://www.bdimitrov.de/kmp/lenses/zooms/_prototype/M32-39f2.8-Flexi.html

It was a 32-39mm zoom.

Posted by: Davide | Sunday, 26 August 2012 at 03:13 PM

Dear Tom L.,

Adobe offers a free DNG Converter. It will handle Olympus OMD files just fine.

My SOP is to take whatever proprietary format my camera delivers and convert them to DNGs, on the theory that these have a slightly better chance of being readable at sometime in the future.

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Dear Timprov,

The two main changes are that I'm going to feel a lot freer to use the 14-42 kit zoom, which I'd been avoiding on the assumption it couldn't be as good as my primes, and to use the 85 Rokinon routinely. I bought that lens as a special-purpose optic; it had not occurred to me that it would be a superior general purpose lens.

If the 14-35 f/2 cost 40% less and weighed 40% less, I would very likely sell my three short focal length lenses and use that zoom instead. Problem is, at its current price even with selling my lenses I would be out a grand. I'm also not excited about the idea of routinely carrying around 3+ pounds of lens and camera. I mean, sure, when the Pentax 67 was my standard camera I did that. But I'm not forced to do that anymore and the flexibility of being able to take the Olympus and a small lens almost anywhere conveniently is not something I'm anxious to give up.

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Posted by: ctein | Sunday, 26 August 2012 at 11:58 PM

Mike, there was also a the Soligor Dualfocal 28&35mm lens in various mounts. When I first heard about this lens I wondered 'what for?' The more I think about it however I can see an advantage to such a design.

Posted by: John Robison | Monday, 27 August 2012 at 12:52 PM

Is it just me or does it seem that MacSpeech has been in training for a decade?

Posted by: William | Monday, 27 August 2012 at 03:09 PM

This post inspired me to haul out my Panasonic 14-45mm kit zoom, which I held on to when I gave away my Lumix G1. It's nice to get closer than 50mm-e without swapping lenses, and to be reminded why I refer to this as "the only kit zoom I ever liked".

(And then I want to open up wider than f/3.5, and it's back to the bag of primes.)

Posted by: Ben Rosengart | Monday, 27 August 2012 at 06:03 PM

Two questions for Ctein:

1. Do you have any personal experience to compare modern lenses (say the Oly 45/1.8) to legacy (prime) lenses (say a Oly 50mm/1.8 from the 80s)?

2. Did you print any of your test shots? If so, did you find any lenses easier to work with when generating the print output you wanted? Were differences magnified or minimized by printing?

Posted by: Mark | Tuesday, 28 August 2012 at 02:47 PM

Dear Mark,

1) Nope, none at all.

2) No, I had no reason to print out any of these; I know how to read what's on my screen. But, in general, there's not really any difference for me between printing and not.

'Course, if all you do is 5x7" prints, fine-detail lens differences become immaterial. (Gross concerns, like vignetting, sure; that's size independent.)

pax / Ctein

Posted by: ctein | Tuesday, 28 August 2012 at 06:28 PM

The comments to this entry are closed.
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