Digital

Mike M.

A lens is a lens is a lens... right?

Are you trying to decide on a new lens to buy for your camera? Maybe you are contemplating a zoom lens or maybe a prime (fixed focal length) lens? Just for the sake of argument and going with full-frame for now, let's say you are wanting something quite wide, wider than your standard 24-70mm zoom lens range, something like a 20mm lens perhaps. Well there are numerous ways to go about getting that focal length. Let's use Nikon for example, since they make a wide range of lenses that could cover 20mm. For their DSLRs we have the AF-S 14-24mm f/2.8, the AF-S 16-35mm f/4G VR, the AF-S 18-35mm f/3.5-4.5 (technically now discontinued) and an AF-S 20mm f/1.8G. For their mirrorless Z-system, they have a Z 20mm f/1.8 S, the Z 14-30mm f/4 S and the Z 14-24mm f/2.8 S. In addition, Sigma also makes a 20mm f/1.4 'Art' prime lens that you can get with a Nikon mount and there are other brands as well.

With all those many options, you might be wondering what the differences really are? If you dial in 20mm on the zooms and compare them to the primes, apart from wide-open f-stop differences, won't they all look pretty much the same? Well, you might be surprised at all the things that can vary from lens to lens! Here is a list of potential differences that you might want to look out for, some obvious and some less so...

1) Wide open f-stop: this can affect AF performance, especially on DSLRs with larger apertures being better. Exposure times in low light or at night can hugely benefit from a faster lens too, however a lens with a faster f-stop will also be bigger, heavier and more expensive, generally speaking.

2) Sharpness: Even when stopped down to smaller f-stops (like f/8 or f/11) there can be differences in sharpness and resolution, especially near the image edges and corners. In additional a lens that performs well for normal photography, might not perform well for shots of the night sky.

3) Vignetting: Shoot all of the above lenses at f/4 for example, and most will have differing degrees of vignetting, the tendency for corners to be darker than the image centre.

4) Distortion: Barrel or pincushion distortion, where straight lines near the edge of the frame are not rendered perfectly straight, can vary dramatically from lens to lens. That sort of distortion is usually corrected for electronically, but if too

much distortion correction is needed, it can negatively impact image sharpness near the edges and corners of the frame as well. In addition, there is wide-angle "stretching" distortion, where objects look "fatter" near the image edges, and that can also vary a bit from lens to lens with no easy way of fixing it in post.

Fujinon XF 8mm f/3.5 R WR - when left uncorrected, this lens exhibits barrel distortion.

Fujinon XF 14mm f/2.8 R - this lens is fully corrected and does not exhibit any barrel distortion.

5) Field-flatness: Take a photo at a wide f-stop of the side of a building, and if your lens has good field flatness, it will be equally sharp in the centre and corners, however if it's not a flat field lens, then you can get image softness at the corners that isn't due to poor lens quality. Sometimes it's hard to tell if corner softness is due to just generally poor lens quality, or if it's due to field curvature.

6) Bokeh: How nicely (smoothly) are out of focus background and foreground elements rendered, especially when shooting at wide apertures? Not usually a big concern on a wide angle lens, but for a portrait lens, it can be critical.

7) AF speed/noise: Different lenses are going to autofocus at different speeds too. If you need the fastest AF, then an f/1.4 lens with big heavy lens elements to move, may well focus noticeably more slowly than an f/2.8 zoom. Not a hard and fast rule, rather a general rule of thumb. How noisy the AF is can also have a negative impact when shooting video with on-camera mics.

8) Focus breathing: If you are shooting video and for example, are racking focus back and forth between two subjects, then it can be distracting to have the apparent focal length change at differing points of focus causing the image to "breath" in and out. Some lenses have almost no focus breathing and with others it can be quite severe.

9) Image stabilization (VR / IS / OIS / OSS etc.): Some lenses might have image stabilization and others may not. Personally I am not a huge fan of image stabilized wide angle lenses since sometimes image sharpness can be compromised when stabilization is used, although for longer focal length lenses, it's generally not an issue. Nowadays, most new mirrorless cameras also have in-body stabilization.

The Fujinon XF 14mm f/2.8 R also has superb anti-reflection coatings and can even be shot into the sun with minimal loss of contrast and virtually no flare.

Here is a lens that suffers from loss of contrast and lots of flare when shot into the sun.

10) Flare / sun-stars / contrast: There are many other aspects of lens design that can affect the appearance of images shot with different lenses. For example, zoom lenses that have a far more complex lens design might often also have more flare or lower contrast when shot into a bright light source like the sun, however the quality of a lens' anti-reflection coatings also plays just as big a part as optical complexity. I have seen some slow f-stop consumer zoom lenses that have less flare and better contrast than some fast f/1.4 prime lenses for example. Sun-stars, with respect to how a lens renders a bright point light source when stopped down, also varies dramatically. Some zoom lenses might give you spikes that flare apart and look ugly, whereas a prime lens might give you nice spikes that come together to a point.

So... as you can maybe see, there can be many, many differences between lenses that might otherwise give you the same field of view. When you consider all the experience Beau Photo staff has had with many different lenses over the years, you can most certainly ask us and we will try and help you find that perfect lens of a specific focal length that you might be after! You can also try renting a couple of lenses to do your own tests to see which will work best for your needs. Check the rental page to see what's avilable. In addition, if you'd like me to expand further upon any of the points made here, feel free to contact me with questions!