

Nikon 70-200mm f/2.8 AF-S VR Lens Review

by Stephen on September 10, 2009

I've had this lens for several years and it performed admirably on Nikon's DX digital camera bodies where it had an equivalent focal length of 105-300mm. However, with the introduction of the D3 and D700 cameras I wanted to re-examine this lens considering its performance on a full-frame digital sensor.

The 70-200mm f/2.8 VR lens is quite large (Figure 1). It weighs 3.2 lbs (1.5kg) and is roughly 8.5" x 3.4" in length and diameter. With the hood, the lens is huge and will certainly attract attention unless you are at an event with other photographers who are also using equally large lenses.



Figure 1. Nikon 70-200mm f/2.8 lens with D700 camera.

Sharpness

To evaluate the sharpness of the lens, I selected an architectural column of Stanford University's Quad (Figure 2) as a test subject and took photos at varying aperture and focal length. I used a Nikon D700 camera, tripod, and remote release. Image stabilization was turned off, the lens was rotated in its collar to allow for vertical shooting, and the camera was leveled with a hotshoe bubble level.

Figure 3 shows pixel level detail at 70mm from various crops across the frame. Except for the center, the lens performed surprisingly poorly and there is significant softness in the image. Upon seeing these results, my initial thought was that I had made a focussing error. However, I have repeated this experiment several times and obtained similar results.

At 135mm, the lens is much sharper across the frame and even into the extreme upper left corner (Figure 4). As with most lenses, stopping down improves sharpness although performance is good enough at f/2.8 that I would not hesitate to use that f-stop.

Figure 5 shows the detail when the zoom is set to 200mm. The sharpness is good everywhere except in the corner crop.

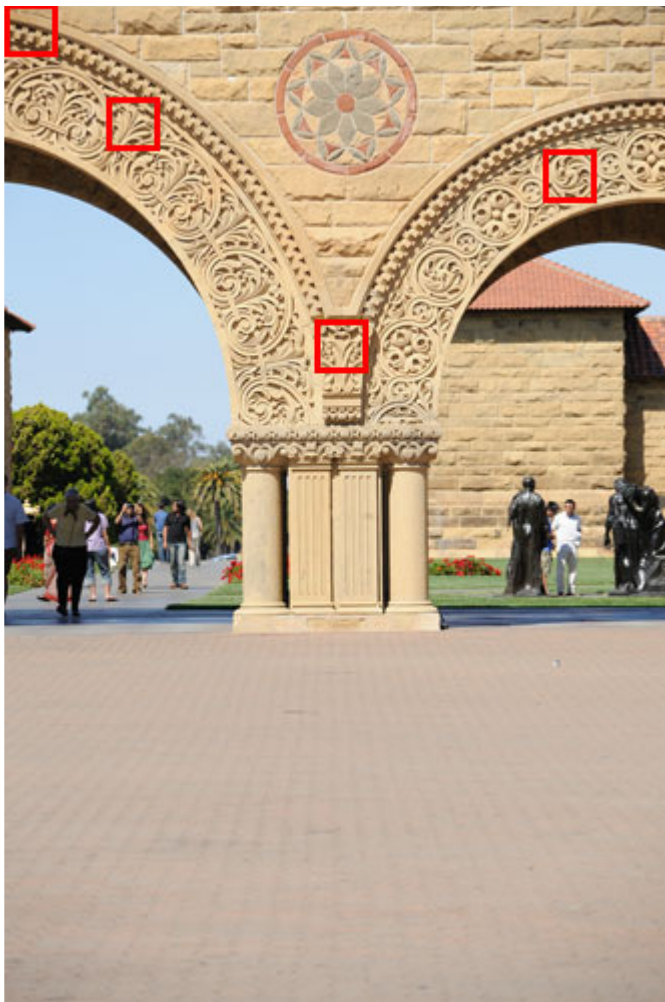


Figure 2. Picture of a column taken at Stanford University. Red squares indicate 100% crops shown in Figure 3, 4, and 5.

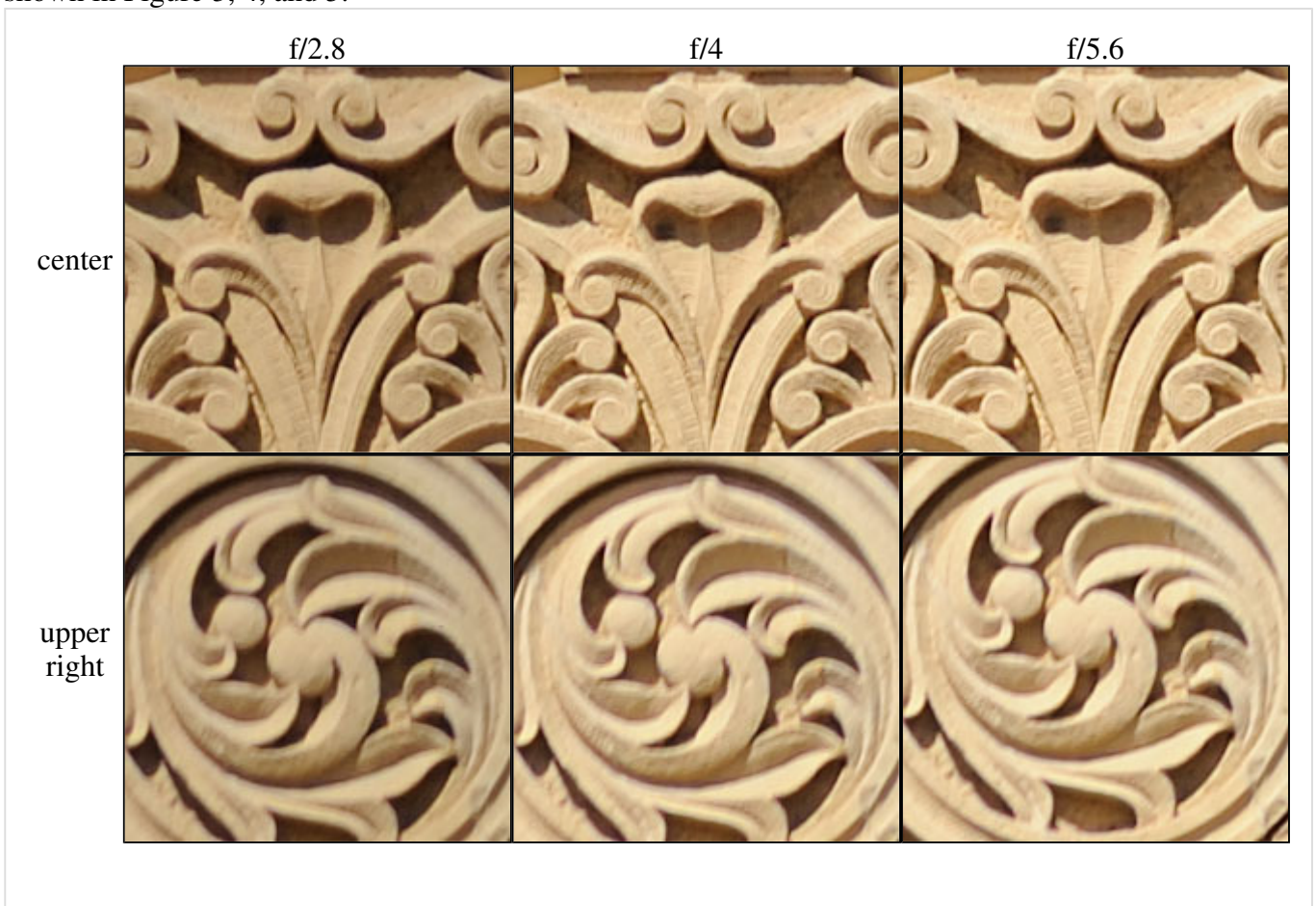




Figure 3. Performance at 70mm: pixel level detail from crops shown at 100% magnification.

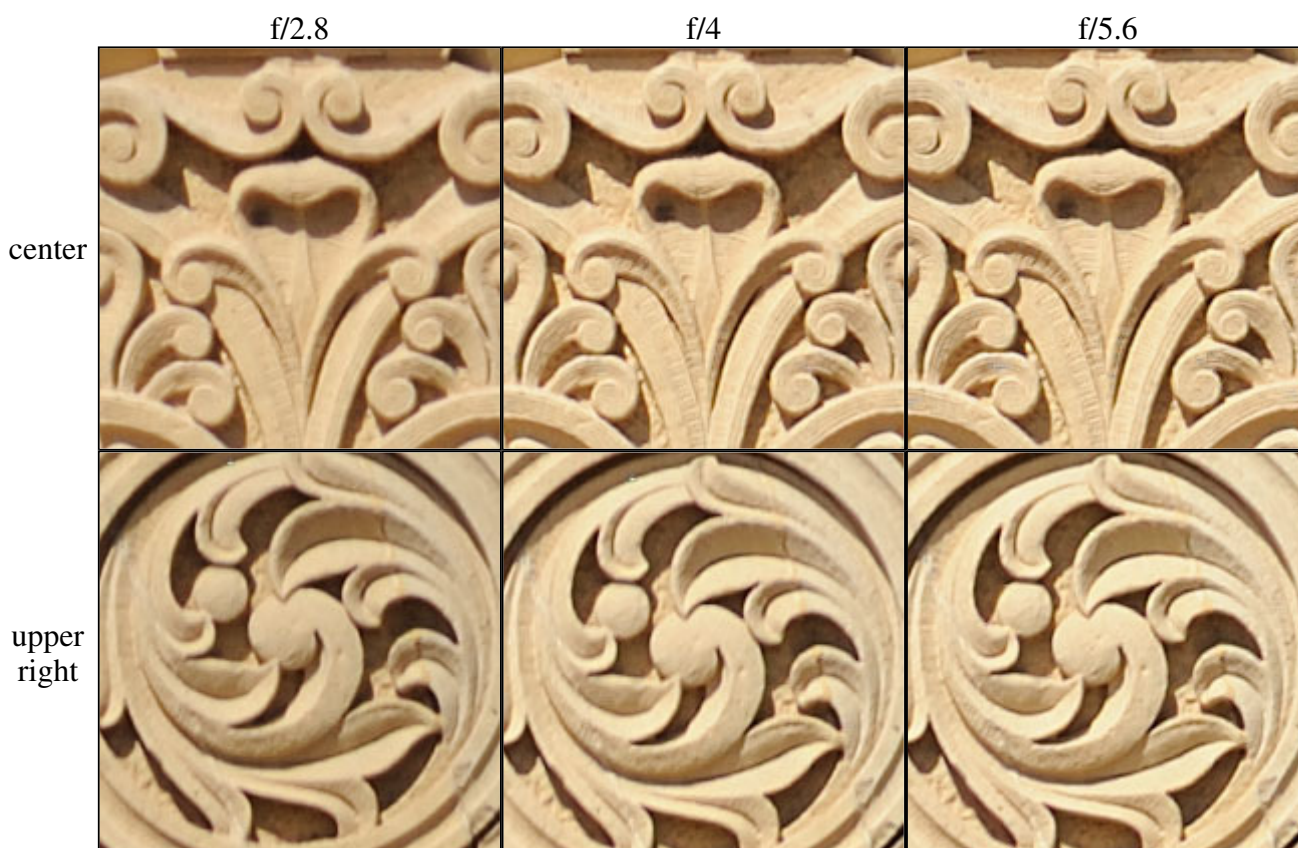




Figure 4. Performance at 135mm: pixel level detail from crops shown at 100% magnification.





Figure 5. Performance at 200mm: pixel level detail from crops shown at 100% magnification.

Close Focusing Performance

Initially, I was puzzled by the poor sharpness results at 70mm. I had previously taken pictures of a mural at that focal length and the image was considerably better. I later read comments by Michael Weber (www.imagepower.de) that claimed the 70-200VR gave better performance at closer distances and I thought that this might be an explanation for the difference between my test shots and previous experience with this lens.

To test this explanation, I took additional shots of architectural detail from a closer distance than my initial evaluation pictures used in Figures 3 to 5. Figure 6 shows the overall frame and Figure 7 shows the corresponding crops at 70mm and $f/2.8$. There is still some softness towards the edges, but the image is much sharper than the results I obtained in Figure 3. While these results are certainly not conclusive, they do support Weber's finding that the lens performs worse at far distances.

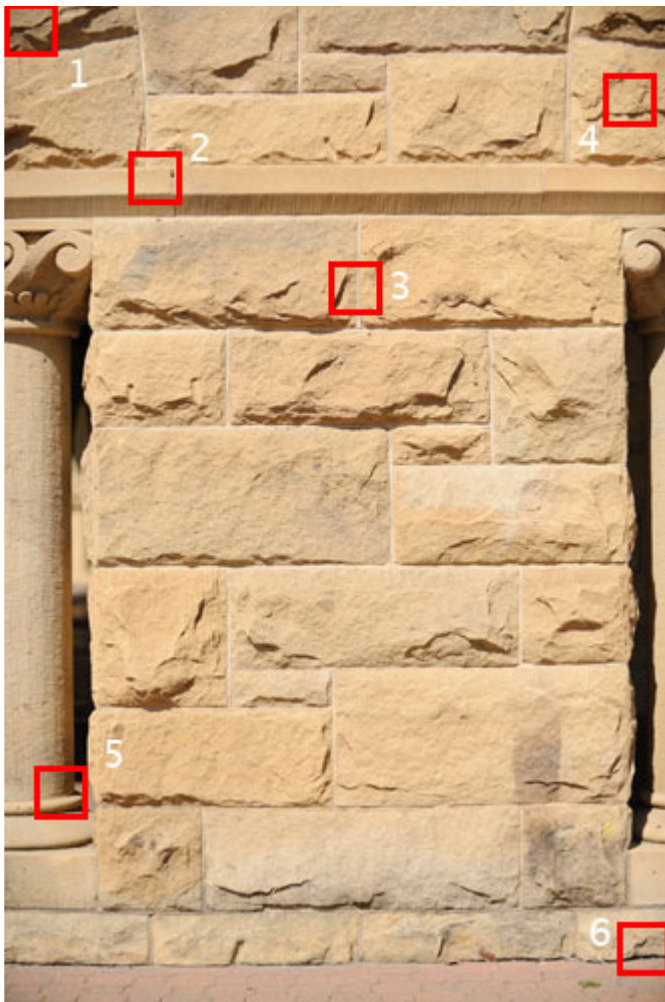


Figure 6. Picture of architectural detail taken from close range at 70mm. Red squares indicate 100% crops shown in Figure 7.

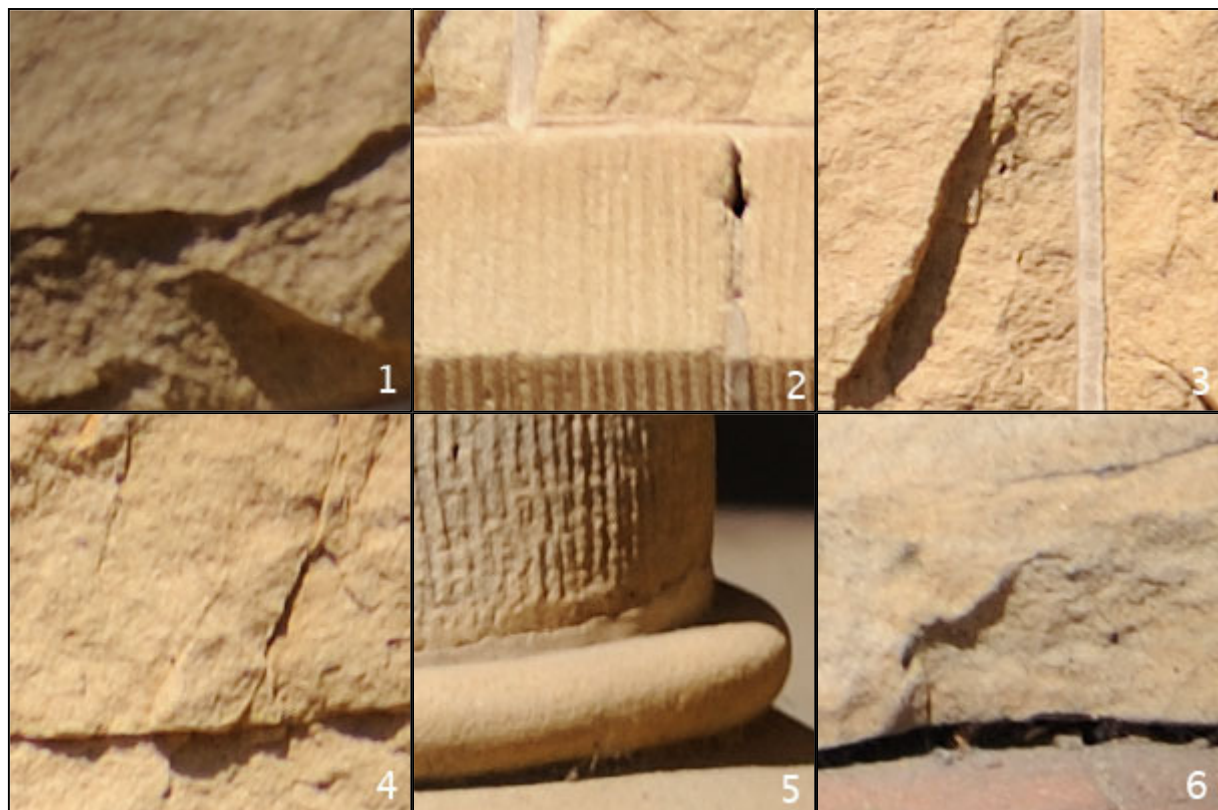


Figure 7. Pixel level detail from the image in Figure 6 shown at 100% magnification.

Vignetting

Vignetting is worst on this lens wide open at 200mm (Figure 8a). You can see a version corrected by Nikon Capture NX2 in Figure 8b.

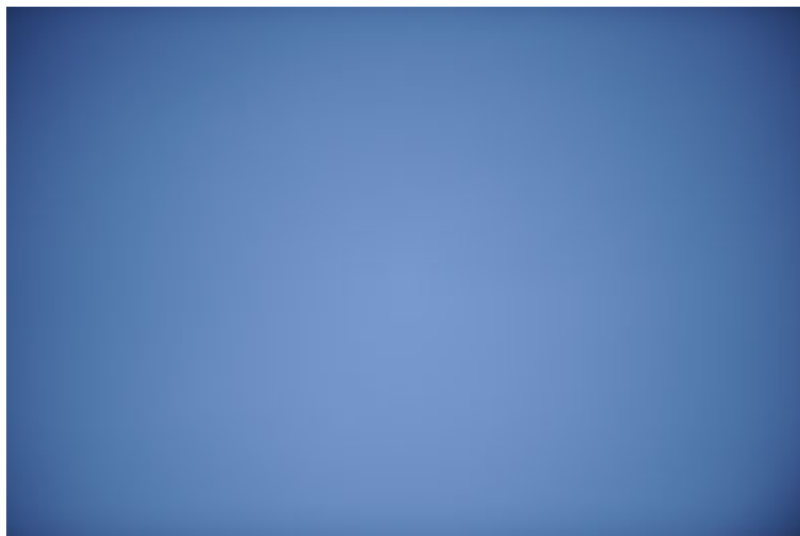


Figure 8a. Worst case vignetting at 200mm and f/2.8.



Figure 8b. Vignetting corrected in Nikon Capture NX2 (50%).

Distortion

This lens has barrel distortion at 70mm but switches to pincushion by 135mm and remains that way for the rest of the zoom range. Distortion is not something I worry about with this lens, since the primary subjects I shoot with it are people not architecture. Furthermore, if distortion must be removed there is software such as DxO or PTLens that can correct the problem in post-processing.

Other Comments

- ¹ The lens comes with a rubber gasket to keep water and dust from entering in the gap where the lens is mounted to the camera body.
- ¹ This lens was the only one I've ever had to send back to Nikon for a repair. While shooting for my Los Angeles book, the aperture mechanism failed and would not stop down leaving only f/2.8 available for shooting.
- ¹ I am not a sports photographer, but autofocus speed is quite good and certainly more than adequate

- 1 Vibration reduction works well on this lens. However, because of the lens' size and bulk I find it harder to handhold well and I may not be benefiting from VR as much as possible.

Conclusions

My version of this lens clearly has sharpness issues wide open at 70mm. However, the performance is fine from the middle to the end of the zoom range on a full frame camera. There is softness in the extreme corner at 200mm but generally any subjects would be positioned further in from the edges of the frame where sharpness is good.

Although I rarely shoot with this lens at 70mm, I am dissappointed by it's full frame performance given that it is fairly expensive and should be one of Nikon's top performers.

Tagged as: [70-200mm](#), [gear](#), [Nikon](#), [tele](#), [zoom](#)