

Review Of The Sony Alpha 7R For Nature Photographers

By
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(This is a greatly expanded review of the Sony Alpha 7R from the preview that was initially published under the title "To Alpha Or Not To Alpha - That Is The Question" in my quarterly newsletter. While a small amount of the content is repeated, this review is largely a rewrite and includes vastly more information, detail and impressions from 5 months of actual shooting experience. It does not include anything on its video capabilities since I am not a videographer and don't use the camera in that way. JPEG capability is also not covered in great detail but is touched upon, as I am a 100% RAW shooter)

For many years I have been looking to reduce the weight of my photo gear while not compromising on image quality. I have made some strides in this area by switching from full size bodies like the Nikon D3x and Canon 1Ds Mark II to higher image quality but smaller bodies like the Nikon D800E. But even those bodies are monstrous compared to some professional film bodies in the pre-digital era and most cameras in the growing mirrorless interchangeable lens camera category. So, while I've trimmed the weight and kit size some over the years, I've had no real breakthroughs. There just wasn't anything lighter and smaller available than a full-featured DSLR that could attain equivalent image quality with the possible exception of the insanely overpriced and under-featured Leica M rangefinder and its equally insanely priced lenses. My search and wait continued as I checked out and tested almost every new option that came to market from Olympus/Panasonic Micro 4/3 cameras to Mirrorless APS-C cameras and even smaller DSLRs like the Canon SL-1. None of these even come close to the image quality and general capabilities of the D800E or even the D3x that I used as my primary landscape photography camera before the D800E.

In October 2013, Sony announced the Alpha 7 and Alpha 7R (a7 and a7R) cameras. They promised the state of the art, world leading, Sony Exmor full frame 135 format sensors in a body that is much smaller and half the weight of the traditional DSLR with similar sized sensors. By November, Sony delivered on the promise with these two full frame mirrorless interchangeable lens cameras. The a7 uses a full frame 24 megapixel sensor similar to what is in the full sized Nikon D600/D610 while the a7R uses the same, world leading, 36 megapixel sensor that is in the even larger D800E. In theory, the Sony a7R should be able to record even more detail than a D800E since the D800E has a complex filtration system in front of the sensor that alters the light path in such a way to largely negate the effects of the anti-aliasing filter while the a7R truly has no anti-aliasing filter at all. Thus, the a7R, on paper, completely eliminates any image quality or resolution compromises that smaller cameras and mirrorless cameras have had with traditional full frame DSLRs while saving a lot of weight and reducing size. The only other difference between the D800E sensor and the a7R sensor is the micro-lens array which sits on top of the sensor's light collection wells since they must be positioned differently for maximum edge quality. This is needed due to the shorter and higher angle light path between the rear element of the lens and the sensor on a mirrorless camera compared to the much larger distance and shallower angle on a DSLR. The distance is much smaller on a mirrorless design due to not needing the space for a mirror in the light path. Elimination of the mirror box, the optics required to project an image to the viewfinder and a secondary mirror system to project an image to the autofocus array, allows the a7 and a7R to be dramatically smaller and lighter than traditional DSLR full frame cameras such as the D600/610 and the D800/D800E.

Rather than duplicating the complete spec sheet for the a7R, simply click on View Specifications here: <http://tinyurl.com/n6xfx8x>. In summary, for a landscape photographer, the Sony a7R offers essentially the same capabilities as the Nikon D800E.

On the following pages, we will take a much closer look at the a7R, its triumphs and its shortfalls:

Size And Weight

The Sony a7R is the lightest and smallest full 35mm frame interchangeable lens camera with autofocus in the world at the time of this writing (February 2014).

Here is a size comparison of the D800E and a7R camera bodies...

As seen from the front:



As seen from the rear:



Here is the top view comparison with each camera's professional grade standard zoom lens (24-70mm):



As you can see, that is a pretty dramatic reduction in size for the promise of essentially identical image quality!

The weight is also a lot less, which allows for somewhat lighter support equipment without giving up stability. Here is a comparison of the weights including the camera support system I have been using for the D800E and what I am now using for the lighter a7R:

	Nikon D800E	Sony a7R
Camera	1000g (2.23lb)	465g (1.04lb)
Lens	895g (2.00lb) - AF-S 24-70/2.8	430g (0.96lb) Zeiss 24-70/4
Tripod	1971g (4.40lb) - Gitzo 3530LS	1700g (3.79lb) - RRS TVC-24L
Tripod Head	862g (1.92lb) - RRS BH-55	519g (1.16lb) - RRS BH-40
Total Weight	4728g (10.55lb)	3114g (6.95lb)

That's a savings of 3.6 pounds. Granted, now that I own one, I could use the TVC-24L tripod on the D800E without loss of stability on typical landscape focal lengths saving more than a half pound but the difference would still be 3 pounds. I have found the BH-55 to provide measurable extra stability over the BH-40 on a heavy D800 based rig but not on the lighter a7R rig since there is generally less weight hanging off the front of the ballhead. Some will say that a 3.0 to 3.6 pound savings is insignificant.

They couldn't be more wrong if they ever venture more than a few hundred yards from their vehicle. When you hike with photo gear at high elevations or do a long shoot where you are carrying your equipment 18 hours a day, that difference is huge. More importantly, airline regulations are getting extremely stringent with carry-on gear in all parts of the world except the USA and I'm betting US based airlines will implement some of the same stringent carry on limits in the future. Some US carriers like Allegiant and Spirit have already moved in that direction. In many parts of the world, 10kg or 22 lb total carry-on weight is considered a luxurious amenity reserved for First Class passengers. For Economy Class, 8kg (18lb) and even 5kg (11lb) are the norm. The total size of the carry on is also increasingly being measured and legislated. Diligent enforcement of these rules is becoming more and more common outside of the USA and Canada. When you combine all of these factors, the weight savings and size savings become a huge factor. In fact, for the 3 plus lb savings, I could add the upcoming FE-mount 70-200mm lens for the Sony a7 and a7R to the kit and still save over 1 pound compared to just the Nikon D800E and 24-70mm lens with tripod and ballhead and still have enough weight left over for an ultra-wide lens. In short, I could cover all of the focal lengths, camera, tripod and head that a landscape photographer uses in the same or less weight as just a D800E with a Nikon 24-70 lens, tripod and head.

From a historical perspective, is the Sony a7 and a7R really that small? As some of you may recall from my newsletters, I have been restoring some family heirloom cameras as well as buying good copies of some of my major milestone cameras from my photographic past. My very first professional grade 35mm SLR was the Minolta XD-11. The XD-11 is widely regarded as the very best manual focus 35mm film SLR that Minolta ever made and it was a pioneer since it was the first camera with a microprocessor which allowed it to offer aperture priority, shutter priority, and manual exposure. Here is a size comparison from the front:



And from the side:



As you can see, from a historical perspective, the a7R isn't really that small. And when you consider that the Minolta XD-11 was nowhere near the smallest 35mm film DSLR, the a7R isn't small at all. If I had an Olympus OM series film SLR to compare it to, the a7R would seem rather large. But we aren't living in a 35mm world anymore and we have been lulled into large cameras. At least Sony has brought us back to reasonably sized full 35mm frame cameras.

Lenses For The a7R

Currently, a major drawback for the Sony full frame mirrorless cameras is the initial availability of native lenses covering the full 24x36mm sensor. At this writing there are only three lenses widely available with a fourth lens just becoming available and a fifth lens coming late in the second quarter of 2014. These do not fully cover the range of focal lengths and maximum apertures that many photographers would normally want or use. One of the available lenses is a low-end 28-70mm f/3.5-5.6 kit lens that is not appropriate for use with the a7R's high resolution sensor and only marginally appropriate for the 24 megapixel a7. In fact Sony does not even sell the a7R with this kit lens due to the low resolution of this lens. The other two currently available lenses in volume are the Sony-Zeiss 35mm f/2.8 and 55mm f/1.8 prime lenses. These are excellent quality lenses although many would prefer the 35mm to be a bit faster than f/2.8 and for both to exhibit less vignetting. The 55mm f/1.8 is a truly outstanding lens second only to the nearly \$5000 Zeiss Otus 55mm f/1.4 super-lens. A professional quality Sony-Zeiss 24-70mm f/4 lens (shown in the size comparisons above) is just starting to ship and a Sony pro grade 70-200mm f/4 lens is due early in the second quarter. No ultra-wide lens has been officially announced although it is on the roadmap for later in 2014. Sony's roadmap shows as many as 15 lenses using the full frame E-mount (FE) that this camera uses. All APS-C E-mount lenses made for the Sony NEX line can be mounted natively (without an adapter) to the a7/a7R but the camera will automatically switch into APS-C mode thereby cropping the sensor to just under 11 megapixels on the a7 and 16 megapixels on the a7R. This is similar to using DX lenses on the Nikon D600/610 or D800/D800E. One can turn the automatic switching to APS-C mode off but this will just result in images with a round blacked-out pattern on the frame edges from lenses designed for the smaller image circle of the NEX cameras.



Sunset In The Neighborhood - a7R with Nikon 28mm (Novoflex adapter)

Fortunately, due to the short flange distance on the mirrorless design of the Sony a7R, it is possible to make an adapter that allows just about any DSLR lens and even most range finder lenses to work in manual focus mode with these cameras. Canon lens owners even have an adapter available that preserves autofocus and image stabilization that works on the a7 and a7R made by Metabones. Sony A-mount users can get the full functionality of their lenses including all electronic handshakes with an adapter made by Sony. For my Nikon F-mount lenses, I have procured a very high quality, German made (and priced!) Novoflex Nikon mount to Sony (F)E-mount adapter that preserves aperture control. I have tested every Nikon F-mount lens that I own from the Nikon 14-24mm f/2.8 all the way up to the 500mm f/4 VR including those made by Sigma and Zeiss. Included in my evaluation was center and corner resolution and chromatic aberration. I did not test for linear distortion since this should be no different than on a DSLR. I have found no significant image quality issues with any of them with the exception of the 14-24 f/2.8 which has a bit more Chromatic Aberration on the a7R than it does on the D800E although Adobe Camera Raw or Lightroom is effective at removing it automatically with the Remove Chromatic Aberration box checked in the Lens Correction section of these RAW converters. JPEG shooters will have to deal with this manually though. To see if your lens has been tested, click here - <http://www.ejphoto.com/Equipment.htm>. All the lenses in the Lens column have been evaluated. Since this is such a wide array of optics, I don't expect any unique issues on the a7R with any 35mm lens from any manufacturer as long as a high quality adapter with very tight manufacturing tolerances is used. My recommendation is to stick with Metabones and Novoflex and not be tempted by many of the very cheap adapters from companies that you have never heard of available on eBay and in other places to avoid any across field uniformity issues due to non-planar adapters. When using a lens with an adapter and RAW converting the files with Capture One, DXO, Lightroom, Adobe Camera Raw, or any other Raw conversion software, note that the adapter does not pass through EXIF data (except for Canon lenses adapted with the Metabones AF adapter described above). These applications will not know which lens profile to apply if you have selected the automatic option for lens correction. You have

to manually select the lens you used during RAW conversion for every photo. This is an inconvenience but the image quality improvement is worth the trouble for any critical work. I have found that the lens profiles for my Nikon lenses from Adobe work just as well on the a7R as they do on the D800E. I do recommend that you turn on, and leave on, automatic Chromatic Aberration removal on the Color Tab of the Lens Corrections menu in the Adobe Products (as I do for any camera). Other applications have similar facilities.

Build Quality

The build quality of the a7R is simply outstanding. It feels like you are holding a block of sculpted metal. The a7R has a mostly metal construction with metal knobs. The a7 has more plastic and does feel a bit more plasticity but still solid. The only plastic on the a7R are some of the switches, buttons, the rear control wheel, the SD card door and the battery compartment door. The most used dials, the front and rear control dials, which are set up for aperture and shutter speed control on my camera, are metal with excellent tactile click stops. The aperture compensation dial and mode selection dial are also metal. Fit and finish is simply outstanding and built to the highest levels of precision, equal to the build quality of more expensive cameras like the EOS 1Dx or Nikon D4. The camera is of a higher build quality from a materials and fit and finish standpoint than the Nikon D800E or the EOS 5D Mark III. The only plastic item that has perhaps a slightly flimsy feel is the battery compartment door. I have the same complaint with the D800E and that camera has proven that those doors are easily broken on the hinge tabs. So far, the Sony a7R has no signs of this hinge wearing out but as they say "it's early days".

Sony claims the body to be fully weather-sealed. While I did not test this, if you are inclined to do so, you can seek out YouTube videos of people running water from a faucet over the camera and it keeps on ticking. Don't do this holding the camera upside down though as I guarantee that the battery compartment is not waterproof.

Ergonomics And User Interface

Designing a camera with essentially all of the features and capabilities of a much larger DSLR in a package that has less than half of the surface area to place controls, buttons, and dials and still have it be usable is a challenge for the camera designer. Given those constraints, Sony's designers did pretty well. It does take some getting used to though especially after the muscle memory that one develops over many years of using much larger cameras. Operating smaller cameras like this with gloves is definitely a bit more challenging. Sony tackled the ergonomics challenge by providing 8 user defined buttons, 3 user defined control wheels and a function button that you can assign 12 different items to for quick navigation to your most used functions. What is baffling though is that Sony did not include a number of things that I would want to assign to those buttons or functions. Only shooting type of functions can be assigned like ISO, AF mode, image type (RAW or JPEG), flash mode, aspect ratio, etc. Quite frankly, between the 8 user defined buttons and the 12 quick access functions, I simply don't need that many shooting options that can be changed on the fly. It would be nice to be able to assign other things like date/time for when you travel to different time zones or have the capability to quickly format the SD card. But all non-shooting type functions like this must be accessed via the menus and it can be cumbersome as Sony, like Nikon and Canon, don't necessarily use the most logical of menus with the most used type functions coming first and lesser used ones further down the menu tree. This has always been a major complaint of mine especially on the Nikon system and if anything, Sony is worse simply because Nikon cameras allow you to place any function possible on the My Menu page. Sony's equivalent of that is the 12 items that can be placed on the function button menu but, as stated, only the shooting type functions can be added there. Surprisingly, the large Exposure Compensation dial cannot be customized so for a photographer that shoots primarily in Manual exposure mode, like me, this dial goes unused. It would be fantastic if this dial could be used to change ISO up and down

up to three stops from the value that is set in the camera making all three exposure controls, shutter speed, aperture, and ISO quickly available in the same area. Changing ISO is easy and can be done through the viewfinder without problem but that would be a slick re-tasking of that wheel and make it even more a "photographer's camera"

Since anything that is displayed on the rear LCD can be displayed in the viewfinder, it is possible to make any menu selection on the fly without ever removing your eye from the viewfinder. Simply press the menu or function button and the entire menu structure, or the quick selection menu accessed by hitting the function button, appears in the viewfinder. When I first started using the camera, my old DSLR habits had me removing my eye from the viewfinder and then making any camera configuration changes on the rear LCD but my brain is slowly being retrained to know that I can simply change anything at all on the camera while looking through the viewfinder - more on this in the next section of this review.

The vast majority of reviews that have been done are on the suitability for these cameras for street photography. As such, they all malign the sound of the shutter. Sure it is very audible and has a long duration but it is still quieter than just about any pro DSLR I've used so it is a complete non-issue to me and in the type of photography that I do. At least it is a real physical shutter sound and not some artificial electronic version of a shutter sound like many point and shoot cameras and some mirrorless cameras have.

The camera is comfortable in the hand due its substantial grip but a small wrist strap should have been included, although to get the most out of this camera and sensor, it should be tripod mounted. Most males will have their pinky fall off the bottom of the camera though unless the optional vertical grip which negates a lot of the size advantage to a DSLR is used. I have installed the Really Right Stuff custom L-bracket on my a7R and that adds about 1/3" in height which is just enough additional height for a more comfortable pinkie placement for my hand.

A number of reviews have complained about the placement of the shutter button. It does sit higher and farther back than what DSLR users are used to resulting in a somewhat less comfortable placement of the index finger. This camera is not designed to be a quick rapid fire shooter where your finger is on the shutter button constantly. It is a camera that requires a slower and more methodical approach so I don't find this to be a major problem. The shutter button placement is on the top deck of the camera rather than on the top of the hand-grip. It is in the same place that classic film SLRs and rangefinders had their shutter buttons but it would have been more comfortable if Sony had placed the shutter button where the front control dial is.



Chihuli Exhibit - a7R with Nikon 70-200 f/4 (Novoflex adapter)

The other complaint against the a7/a7R relates to the rear LCD. It is great that it tilts up and down making it much easier to take photos low to the ground or high up in the air but it doesn't articulate in other directions. But that isn't the biggest complaint about the LCD... Why isn't the rear LCD a touch screen? It would make things like selecting specific functions so much quicker than having to first push a button and then having to scroll through things with a dial in today's age of touch screens.

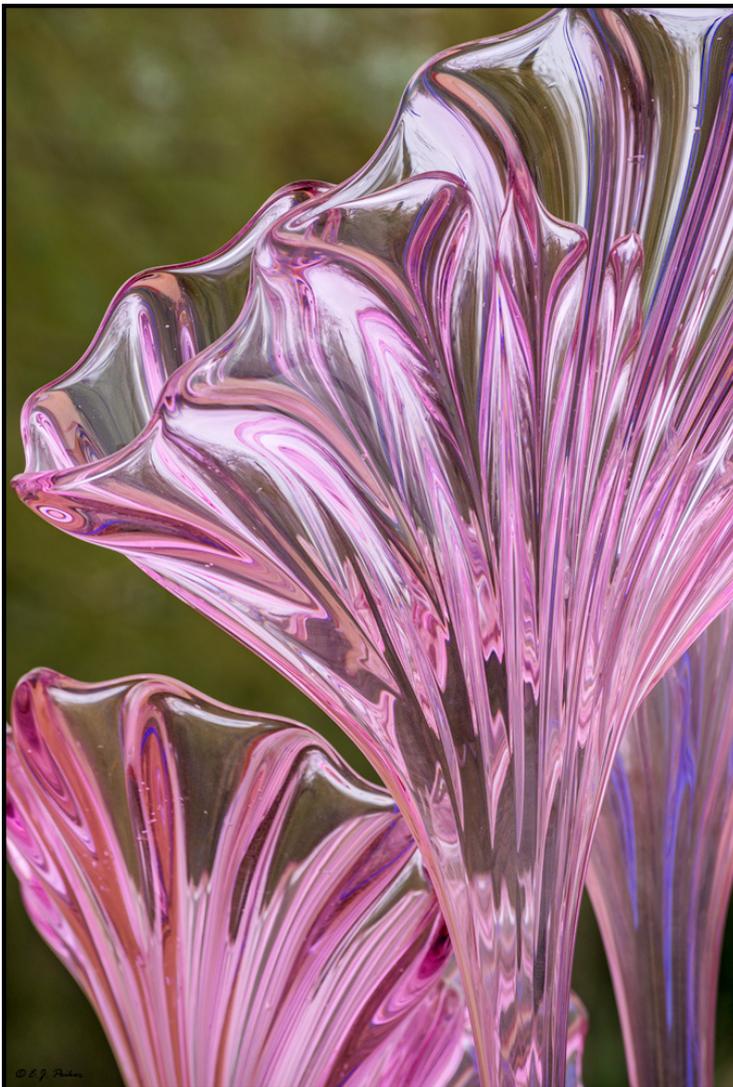
One of these years the major camera companies are going to come to the realization that hiring a true ergonomics expert for the camera design team, both on the physical layout front and on the menu interface front will make their cameras so much better.

Viewfinder

Some long time photographers will initially scoff at the prospect of using an Electronic Viewfinder (EVF) instead of the more traditional Optical Viewfinder (OVF). Until recently they were probably right as the EVFs were poor pixelated images that had a noticeable lag to what was actually happening outside the camera. But today, viewfinders like the EVF in the a7R are among the very best made and most of the

drawbacks of earlier generation EVFs have been overcome. The image is large and bright with excellent dynamic range and no real visible pixelation until you get to high ISO values or long exposures where a lot of gain needs to be applied to see the image. But this is also when an optical viewfinder gets so dark that it becomes difficult to frame the image.

There is virtually no detectable viewfinder lag. Being able to project the same information that you can get on the rear LCD, including histograms, exposure warnings, 3 dimensional levels, menu options, shooting functions, etc. in the viewfinder is very useful. Some find it annoying that the a7/a7R viewfinder, in default mode, projects the image just photographed after taking a picture, rather than immediately going back to live view ready for the next shot. Fortunately, turning off Auto Image Review can turn this off. But there is no way to set the camera up so that the EVF shows the live situation outside the camera while the rear LCD shows the photo that was just taken. This is what a DSLR does due to its optical viewfinder. In fact there is no way to have the electronic viewfinder and the rear LCD on simultaneously at all. There is a set-up option that allows you to set the camera so that it automatically switches between the rear LCD and the EVF based on its detection of your eye position – that is the out-of-the-box default option and the one I



Chihuli Exhibit - a7R with Nikon 70-200 f/4 (Novoflex adapter)

find most useful. Optionally you can set the EVF/LCD operation so that it either displays everything on the rear LCD, disabling the EVF, like a point and shoot camera or smart phone with no viewfinder. Or you can set it up to display only in the viewfinder like a film camera. It would be nice to have a set-up option that allows display on both simultaneously and it would be really great to have an option that allows you to have the viewfinder display the world outside live all the time while the rear LCD displays the most recent photograph until you touch the shutter button. This would make the switch much more comfortable for long time DSLR users. An option like this may not be included due to the large battery drain that this would cause by powering both displays simultaneously. I have chosen a compromise value of 2 seconds of latency between displaying the just taken image and the viewfinder returning back to Live view but I will turn the image review off completely if I am in a hurry. The switch from rear LCD to EVF takes about a half second from the time you place your eye on the viewfinder. Some reviewers have found this problematic and too slow of a switch-over time but it really hasn't bothered me at all. There is a relatively long viewfinder blackout when taking a picture due to the shutter first having to close before taking a picture.

As with almost any camera, I wish the eye relief was slightly longer to make it easier to see the full frame for eyeglasses wearers but I have that complaint for every DSLR and even some medium format cameras. The projected image and shooting data is optically at infinity just like it is with a DSLR. There is actually more diopter adjustment range than with any other camera I've used.

Another advantage of the EVF is that you see the depth of field that you will get on the photo. With a DSLR, when looking through the optical viewfinder, you are always seeing the image with the lens wide open which is only an accurate depiction of the depth of field in the final photograph if you happen to be shooting with the lens wide open. For most landscape photographers, that is a rarity outside of night photography. Of course you can push the depth of field preview button to get an idea of the actual DOF in the resulting photograph but that often dims the optical viewfinder so much that it's difficult to properly assess the depth of field. An EVF has none of these problems and you truly see the DOF that will be in the final photo. This would also be highly useful to macro photographers. Finally, you actually see the effects of a white balance adjustment or whatever white balance the camera is choosing with auto white balance in the viewfinder.

The EVF in the Sony a7R shows a much cooler image to my eye than what the eye actually looks at when viewing the scene in the real world and also cooler than what the actual photo. Fortunately Sony allows you to tweak the color temperature of the viewfinder to one of 5 positions from -2 (warmer) to +2 (cooler). I have found that the -2 setting more closely aligns with how I see the world and with the actual image that is being taken.

Autofocus

Perhaps the biggest drawback, for many, of the Sony a7R, relative to a DSLR, is that the autofocus system employed is a 25 point contrast detect (CDAF) system. DSLRs have a phase detect (PDAF) system and some other mirrorless cameras have on-sensor PDAF like the 24 megapixel a7. CDAF is generally much slower than PDAF and it can't track moving subjects as well, if at all. It is dramatically less effective in low light giving up about 3 stops of light before PDAF systems start to falter. On the other hand, the CDAF approach eliminates the need to calibrate focus for every lens to every camera since focus is done at the sensor plane rather than in a different location from the sensor, as is the case on DSLRs. The 25 AF points are placed across the entire frame, which is a big improvement over the center oriented AF patterns on full frame DSLRs. The lower spec 24 megapixel a7 does add phase detect AF on the sensor but performance is still behind the best DSLR AF systems from Nikon and Canon and even similar on chip-phase detection systems from other manufacturers. Even in good light, compared to all but consumer grade DSLRs outfitted with slower kit lenses, the AF is incapable of tracking anything moving except something that is moving slowly at a constant speed across the field of view. It simply cannot track an object moving toward or away from the camera with critical accuracy. It

is nowhere near as good as cameras from the Olympus OM-D series or the Nikon 1 system. With only 25 focus regions, this camera lags behind the competition which often offers 3 times as many focus points in models costing much less than the Sony costs. For the use that I would put this camera to, mainly landscape and travel photography while mounted on a tripod, this will not be a major factor but shooting any kind of action is out of the question. Sony should really have given a camera at this price point the best CDAF on the market.

A minor issue with the autofocus system is that even with the smallest selectable AF area, it is still about 25% larger than a single AF point on any DSLR I have used resulting in a somewhat higher ambiguity level on what is actually being focused on. A smaller AF area selection should be made available. It is, however, very nice to be able to move the AF point anywhere in the frame. In use the larger AF point limitation isn't as critical as it seems since there are a number of other ways to determine accurate focus on minute details that are designed for manual focus (see below) but are also available during autofocus.

In its default configuration, the simple act of moving the location of the autofocus point is several button pushes just to get to a place where you can move it. You have to first enter the functions menu, then navigate to the focus area icon, press enter and then you can move the AF point via the rear control pad. This is an incomprehensible default choice on the part of the Sony firmware developers. Fortunately you can configure one of the custom buttons to activate the ability to move the autofocus point reducing the number of button pushes to be able to move the location of the AF point to just one. You won't find that anywhere in the included manual or even the downloadable detailed PDF manual though – more on the camera's documentation, or lack thereof, later.

Moving autofocus off of the shutter button is also not immediately obvious but here's how to do it! In the menus turn off Lock-on AF, turn off Pre-AF, turn off AF w/ shutter, and finally select a button to assign AF-on function. I have experimented with several buttons for this function including assigning the button in the center of the rear control dial to but I have found that it is more and consistent with other cameras to have the AF-on function nearest to where your thumb naturally falls when shooting.

The camera offers some useful autofocus options not normally found in cameras capable of the level of image quality that the a7R is capable of. Face detection is selectable that will recognize up to 8 faces and smile detection is also available. The later automatically trips the shutter when a smile is detected making those family shots a little bit easier.

Manual Focus

It is a pleasure to manually focus this camera compared to manually focusing a DSLR but it could be even better with a simple firmware change. The camera provides two manual focusing aids that make it very quick and accurate in most cases. The first is focus peaking. The a7R has three different sensitivity settings for displaying a bright colored (white, yellow, or red) outline on anything of sufficient contrast that is in focus - this is called focus peaking. Focus peaking is also useful since it shows you objects in the foreground and background that also have sufficient edge contrast for the camera to think that it is in focus. This can be a two edged sword, especially in the high peaking



Lantana - a7R with Sigma 150mm f/2.8 OS Macro (Novoflex Adapter)

setting, as it will display things as in focus that decidedly are not simply because there is a lot of contrast. Similarly, an area that is in critical focus might not show the peaking highlights because it is in a low contrast area. But with a little bit of practice, very accurate focus can be achieved with peaking as long as there is enough contrast for the focus peaking to work – it isn't going to work on a foggy day, in low contrast or in low light. For critical front to back focus work, I would suggest using the low peaking setting and in most general cases the mid level setting is appropriate. I have settled on yellow as my peaking color.

A second manual focus aid is the ability to quickly magnify the image with two increasing magnification steps. You can zero in on whatever part of the photo or wherever in the frame that you want your critical point of focus to be. As with anything on this camera, this can be done either inside the viewfinder or on the rear LCD. But here is where a small firmware change could drastically improve usability and speed of operation. As it stands now, after assigning magnification to one of the buttons, it takes 2 button pushes, not one, to magnify the image. The first button push simply brings up a box to show you where the magnification sample will be taken and then the second one magnifies it about 8x; another button push magnifies it even more. You can move around within the frame in magnification view with the buttons on the control dial. The first button push bringing up the bounding box is a wasted button push since you can move around at will in magnification mode. It can be eliminated. Second, the first magnification level being 8x can be very hard to manually focus a telephoto lens when hand holding since this makes the image so jumpy due to the focal length. There should be a 4x step in the viewfinder enlargement. One must be very careful not to get the right index finger anywhere near the shutter button while focusing in magnified view or risk resetting the view back to 100%. Sony should require a half press to cancel magnification, not just a touch sensor. Simple firmware changes could remedy these issues.

For highly critical manual focusing, set the lens to the aperture you are going to shoot with and combine the Peaking setting set to high and maximum magnification while mounted on a tripod. Tweak the focus ring on the lens until the maximum amount of peaking is seen in the precise area that you want critical focus on. If there isn't enough contrast to trigger the peaking, simply focus by sight - due to the high magnification extremely accurate focus can easily be achieved. This is actually fairly easy to accomplish if you set one of the custom buttons for magnification (C2 in my case) and another to change peaking levels (C3 in my case). Having gotten used to shooting this way on the a7R, I now miss not being able to magnify in the viewfinder on my Nikon D800E cameras. One can focus extremely precise without any ambiguity whether or not the item you want to be in critical focus is actually focused as well as possible.

Photographers that never shot in the world before autofocus may find the description of this procedure daunting but it truly is exceptionally easy to manually focus lenses as long as they aren't a very long focal length. At longer focal lengths, vibration of the subject in the viewfinder when magnified can become a problem for accurate focusing.

Exposure System

Like most DSLRs, the a7/a7R have multi segment intelligent matrix metering, spot metering and center weighted metering. The multi-segment matrix meter has 1200 unique zones that are used to evaluate the exposure. You really give up no capability in this regard to any DSLR. The EVF does give you some capability though that you either would not have with a DSLR or would only have in Live View mode using the rear LCD. You can have a small histogram in your EVF view overlaying the photograph you are about to take as well as highlight and shadow warning blinkies. On many DSLRs you only get this information after you have taken the shot. The pre-shot histogram in the viewfinder is only a composite histogram though, not the more desirable RGBC histogram that you can get after the shot has been taken.



High Desert Sunset - a7R with Zeiss-Sony 24-70mm f/4

One feature, borrowed from the film industry, that is highly useful and available in the viewfinder (or on the rear LCD) is what is known as zebras. Zebras are a diagonal black and white stripe pattern on any part of the image that falls above a certain luminosity level. The camera allows you to vary the threshold at which zebras occur. For a landscape photographer you would want this to only trigger on areas of the image that will be beyond the sensors ability to record so the 100%+ light saturation level setting is appropriate. But if you were a portrait photographer and worried about skin areas becoming too bright, this could be set at a 70% or 80% light saturation level. The zebra patterns would then warn you if the lights aren't set right creating a hot spot on the model or if there is some oil on the skin of the subject that needs to be powdered or anything that would lead to an area that is too bright on the subject. This is an incredibly useful feature and I now have it set to the 100% + setting all the time.

One might ask why not set the threshold for zebras right at the 100% point or even a bit lower to insure no overexposure? That leads me to one of the issues with the a7R and a7; its metering system is definitely biased to underexpose. You can have the pre-shot histogram right up to the right edge, overexposure blinkies just starting, or

zebras at the 100% setting going off and the resulting RAW exposure will be about 2/3 stop darker than this would indicate with plenty of exposure headroom remaining. This is why I set the zebras at the 100% plus setting and even then I will accept a small amount of zebra pattern knowing that the actual exposure is a bit darker than what all of the metering and warning indications might suggest. As an aside, I have noticed the same thing with the Sony RX100 compact camera - it seems Sony biases their metering systems a bit to the negative side in an attempt to insure no overexposure. That may be appropriate for JPEG shooters where you have less headroom and less capability in post processing but not RAW shooters.

Power To The Camera!

Up until now, given its size and price (\$2300), the a7R has impressed; like any camera it has areas of greatness and areas that could be a bit better. Battery life is where the a7/a7R falls flat on its face compared to any DSLR and most other mirrorless cameras. In a word, it sucks! While its CIPA rating is 320 shots out of a full battery charge, good luck with that! A much more realistic shot count is 250 and even with that you will be sweating it the last 50 shots as the battery life indicator seems to not be linear. It loses half its charge in the first 50 shots and then the next 150 to 200 in the last 50% of the battery life indicator. The batteries are small and light so carrying spares is easy but you would need 3 spares plus the battery in the camera to equal the number of shots from one D800 battery. Clearly the full time Live View, either through the viewfinder or through the rear screen eats a lot of power and such

a small camera simply can't have a larger battery. All of this is with lenses connected with an adapter that draw zero current. When a lens that draws power with autofocus and image stabilization (Optical Steady Shot or OSS in Sony speak) is connected, this can only get worse. I have proven that it is not the actual picture taking itself that causes the battery drain as I have done time-lapse captures of over 500 frames with just a 30% drop in battery life. When shooting like this, the EVF is off and if you turn off Image Review, the amount of time that the rear LCD is on is very short between each capture. Clearly the EVF is a major draw on battery current.

To add insult to injury, Sony doesn't include an external charger. Without buying an optional external charger, you have to charge the battery with the camera attached to the supplied USB charger. The small USB charger that Sony provides only has 0.5 amps of charge current resulting in about a 4 hour charge time. The battery can handle up to a 1.1A charge current. Simply plugging the Sony camera with a micro USB cable into the little tiny iPhone charging cube will double the charge current to 1A and cut the charge time in half. As stated earlier, Sony does offer a vertical grip which can take an additional battery but even then you would only be getting 400-500 shots before two batteries need to be recharged for up to 4 hours each if you are using Sony's supplied method of charging. How Sony cannot include an external charger that costs them maybe \$10 with a \$2300 camera is simply incomprehensible. Sony keeps wondering why professional photographers won't take them seriously despite having, in many areas, superior technology to Canon or Nikon. Look no farther than battery life and not supplying an appropriate charging system with the camera. I highly recommend getting the external battery charger that is available for these batteries.

Once you finally have power available to the camera, it still takes a while to use it. A cold start right after a battery has been inserted takes a staggering 10.5 seconds. A regular start-up where the battery has been in the camera can take anywhere from about a half-second to three seconds or more. It is unclear to me why it takes a varying amount of time to power up the camera. Even without a battery change, it seems like the longer the a7R was shut-off, the longer it takes to power back up. Occasionally, if I haven't powered up the camera in a couple of days, it takes as much as 5 seconds to come to life but if you have just turned it off, it comes back on almost instantly unless you just quickly toggle it off and on and then it can take a couple of seconds - very puzzling. Additionally, after the camera goes to sleep in standby mode, it can take anywhere from about a half second to as much as 2 seconds to come back to life. Again, I have no idea why the time varies. Hopefully a firmware release will address this.

WiFi, NFC and In Camera Purchased Apps

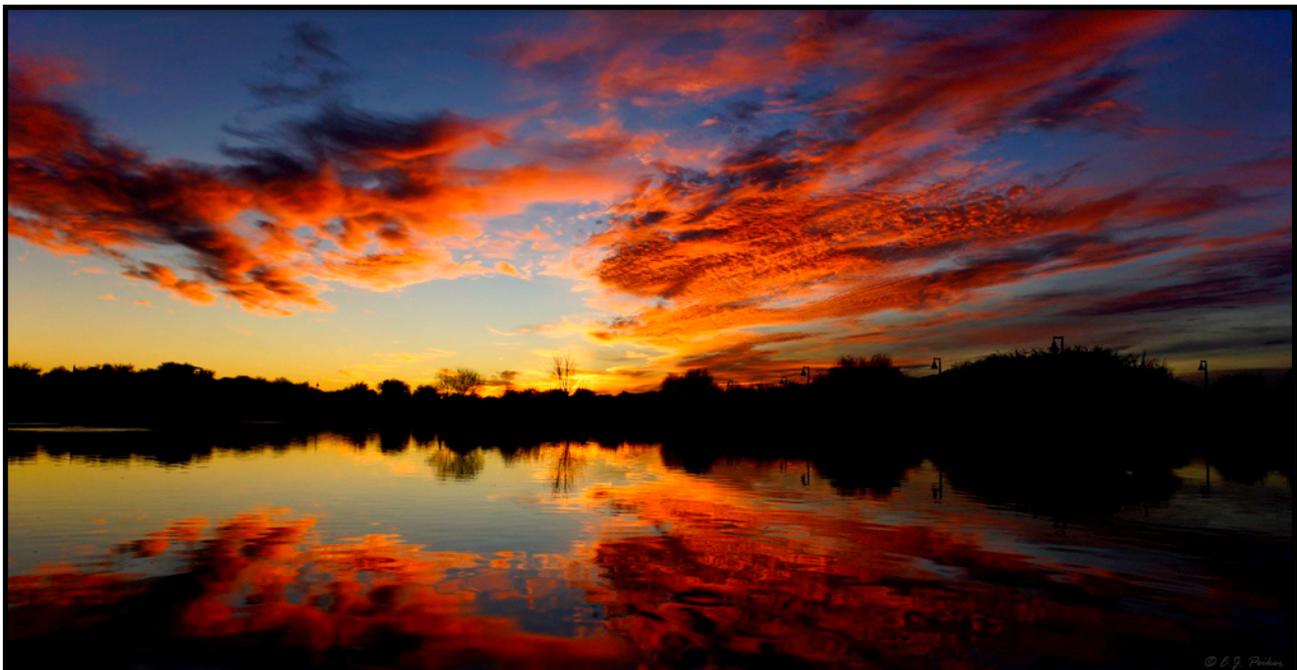
Both a7 variants include WiFi and Near Field Communication (NFC) for interfacing with a smart device, tablet or PC. An iPhone or iPad would be connected via the WiFi hot spot that the camera can be set-up as. Android devices with NFC need merely touch the camera in order to establish communication. (Apple rant - why on earth would you not include NFC in your latest iPhone 5s and iPad Air?) When you install the Sony Play Memories app on your smart device, the device can then be used as a wireless shutter release and the photo immediately pops up on your phone or tablet. Most shooting parameters can be changed right on the tablet and that information is then instantaneously sent to the camera and the change is made. This allows you, for example, to set up the camera outside on a cold day while you are inside and you can fire the shutter as long as the phone or tablet is within range. My only negative on the remote trigger capability is that it does not work in bulb exposure mode and is therefore limited to 30 second exposures or shorter.

In addition to the a7R's WiFi capabilities that allow other devices to connect to it, the camera can also be a device that connects to your own home WiFi network or any WiFi network on the road. It is even possible, although cumbersome to surf the Internet on the back of the camera. The a7/a7R includes 100MB of on-board memory dedicated to applications that can be downloaded and installed on the camera to expand its features. The camera comes pre-installed with the Smart Remote application

which allows a smart device like a phone or tablet to control the camera as described in the previous paragraph (note that there is an update available to this application since the initial cameras left the Sony factory - you can update this right on the camera when the camera is connected via WiFi to the PlayMemories App Store). Some of these apps are free, others cost as little as \$4.99 and some cost as much as \$9.99. They can add significant capability to the camera. At the time that this review was written, the following capabilities could be added to the camera - Multiple Exposure Mode, Lens Compensation Table creation for any lens, Time Lapse, Additional In-camera Picture Effects, In-camera Photo Retouch, Flickr add-on, Direct Facebook upload, and a number of different keyboards. The possibilities for extending what the camera can do is exciting. Sony seems to be adding apps at a rapid pace making all of the NEX apps compatible with the a7/a7R. There is no way of knowing that new things are available though unless you periodically check by entering the Application menu on the camera while it is connected to the Internet. Sony does not seem to announce the availability of these apps on any web site. Some of the apps can be very complex and there is no real on screen help although they do try to make each option as self-explanatory as possible. There is some documentation available on Sony's Play Memory web site for each of the apps.

To date I have only purchased the Time-lapse application in addition to the free pre-installed Smart Remote application. This application is quite comprehensive and allows you to either have the camera assemble the time-lapse video in AVCHD or MP4 formats or allows the user to assemble the final time-lapse video using whatever video format or compression format you want. There are numerous pre-cooked recipes including some recipes that vary exposure such as in a sunrise or sunset. The sunrise and sunset recipes work amazingly well eliminating the need for external bulb ramping capability with absolutely no flicker. In other words the app uses step-less exposures, which is something no DSLR is capable of without some external bulb-exposure ramping contraption, which limits the fastest exposure, to whatever the fastest bulb mode exposure the camera is capable of. For the Nikon D800 the fastest Bulb exposure that is possible is only 1/4 second. For time-lapse shooters, this is so much better and easier than anything you can do with a DSLR, it is well worth the \$9.99 price.

Sony also makes the Remote Camera Control application for PC or Mac available free of charge for tethered studio shooting.



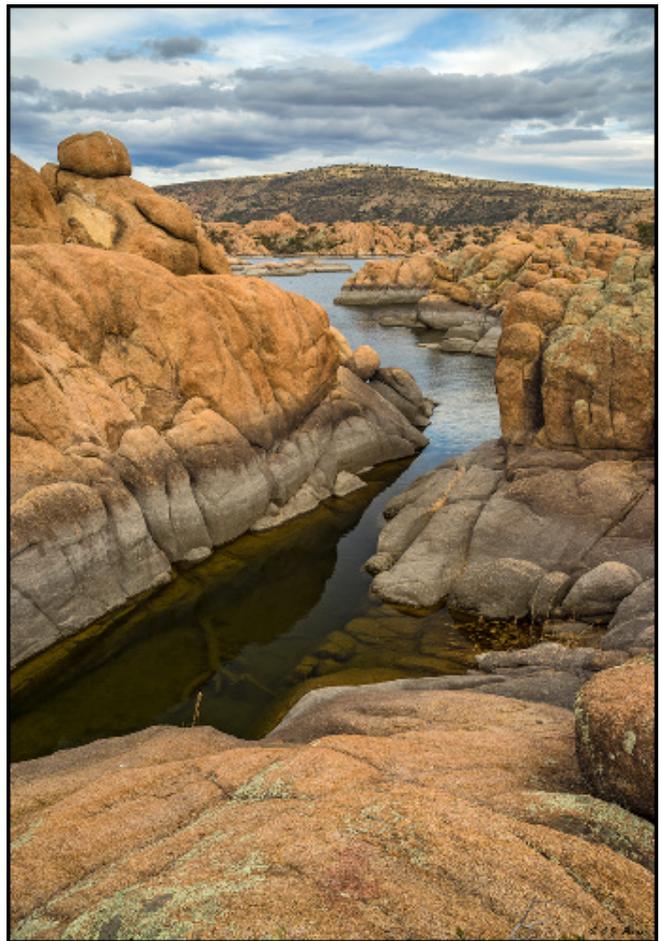
Single frame from 1080P Sunrise Time-lapse sequence - a7R with Nikon 24-70mm f/2.8 (Novoflex Adapter)

Camera Manuals... Can We Have Them Please?

One of the first things you notice when unpacking the a7 and a7R is that the very thin and cheaply printed multi-lingual manual is a waste of the paper it's printed on. It offers essentially nothing of substance on how to use this camera. Nowhere in the included items is there any indication on where you can get more information. There is no CD, memory stick or even URL included. Only upon visiting the Sony website and navigating through many layers, was I able to find a more substantial PDF guide of more than 450 pages. But even this guide is very poor. Finding what you need is almost impossible as it has no index but has a 60+ page table of contents that one would need to wade through just to link to the page that might have the info you need. If you link to a page that doesn't have what you need, there is no way to go back to the point that you left the table of contents from but rather you have to scroll back as much as several hundred pages. This is so poorly designed and implemented that it boggles the mind. Nikon and Canon manuals are much maligned but they are literally light-years ahead of this abomination. This is a very complex camera with a massive number of features and capabilities and it deserves a thorough, well-written and indexed user manual. It is sad when a review site like DPReview.com provides a better and more useful table of menu options and what the options do than the available documentation.

The Shuttering Shutter

The lower mass of the Sony a7/a7R compared to a larger DSLR makes it more prone to shutter induced vibration. The camera requires the same size and mass shutter as a full sized full frame DSLR but the much lower weight of the camera dampens vibrations caused by the motion of the shutter much less. The a7 does have an electronic first curtain shutter, which will help this a lot, but the 36 megapixel sensor of the a7R does not support this. On an a7R, first the shutter must close since the shutter is usually open to provide the live view to the EVF or rear LCD and then the shutter must fire in the normal way. That initial closing of the shutter appears to be the biggest culprit in making this camera more vibration prone. Mirror slap however is not a consideration since these cameras don't have mirrors. A lot of tests on this have been done and shown all over the Internet but it seems that medium telephoto lenses that are light weight, like the 70-200 f/4 genre seem to be the most affected. Adding the mass of a solid ballhead and tripod and damping the vibrations by placing a hand on top of the lens, similar to good long lens techniques with super telephoto lenses is very helpful in dampening this as well. Since I shoot almost exclusively from a tripod, none of my photos so far have been afflicted with this issue. Sony should address this via firmware by changing the way the shutter initially closes when used in a delayed shutter mode such as with the 2 second self timer. If the shutter closed on initial tripping of the shutter button and then the



Watson Lake - a7R with Zeiss-Sony 24-70mm f/4

exposure proceeded normally after the self-timer runs its course, the problem could largely be averted. As it stands, even with the self timer on, the initial closing of the shutter doesn't occur until right before actuation of the shutter to capture the photograph. This issue is not new to photography. Medium format cameras have similar problems. The very large focal plane shutters needed for the large sensors also induce significant vibration on those cameras independent of mirror slap which is generally not an issue if using mirror lock-up. It is for this reason (as well as flash sync reasons) that leaf shutter lenses are so popular in the medium format world. Unfortunately we don't have leaf shutter lenses in the 35mm photographic world.

While we are on the shutter, it should be said that the shutter button has a somewhat mushy feel and the difference between a shutter half push to initiate focus and metering and a full trip is more ambiguous than on most other cameras that have a positive tactile feel to each of the two shutter button positions. This, however is something you get used to almost immediately and after just a few shots and if you assign autofocus actuation to another button, it's a non-issue.

When RAW Isn't Truly RAW

I noticed right away that the Sony RAW files are about 5MB smaller than the same RAW file shot on a Nikon D800E. Unless Sony has come up with a more efficient lossless RAW compression format, this should not be the case since it uses the same sensor. Several RAW file experts on the internet have taken apart the Sony RAW files and it turns out that Sony's so called lossless RAW file format is not truly lossless, they do throw away some information in their compression algorithm. The RAW file forensic specialists show a number of scenarios, especially at ultra-high contrast edges between white and black where compression artifacts can be seen when viewed at a pixel level. It is very evident on star trail photos in areas immediately adjacent to a trail when viewed at pixel level. I doubt that there are many instances where you would ever see it in a print though. This makes Sony's claim of 14-bit lossless RAW files a flat-out lie - it appears to be true for all Sony cameras that shoot "RAW". While I haven't noticed this visually on my photos, I would gladly trade a slightly larger file for knowing, without a doubt, that the compression algorithm is throwing nothing that the sensor captured away.

Buffer

The RAW buffer is impressive for this type of camera. When shooting the a7R in continuous mode with continuous AF the buffer does not fill up until you reach 35 frames at 1.5 frames per second. With locked focus in speed priority mode, the buffer fills after 16 shots at 4 frames per second. Since this isn't an action oriented camera, it will be very rare, and maybe never that the buffer limits are met. A full buffer clears in 8 seconds with a fast card and the frame rate slows to one frame per second once the buffer limit is reached. Surprisingly the JPEG buffer limits are about the same suggesting that the image processing time is the limiter, not buffer memory size or the data pipeline off of the sensor.

Image Quality

Since the a7R uses the same underlying sensor as the 36 megapixel Nikon D800E, with some necessary microlens changes due to the shorter lens to sensor flange distance and the complete elimination of the anti-aliasing filter, my expectations of image quality were very high. The D800E is unquestionably the highest resolution and highest dynamic range full frame DSLR currently on the market. Would the a7R approach, equal, or even surpass that of the D800E?

In short, the a7R is equal to the D800E for image quality in every conceivable metric. I detect no visible difference in noise, acuity, color capability, dynamic range or any other metric I can think of. I do detect a slight reduction in vibrancy on RAW files of the same subject taken with the same lens between the

a7R and the D800E indicating a slight difference in the color filter array but since the Sony files are slightly less vibrant, it is simple to make them look identical which is why I indicated that there is no notable difference in color capability. In ACR, one simply needs to set the default vibrance about 5 points above what one would use with the D800E for similar results. I did most of my testing in the winter months with temperatures below 75 degrees Fahrenheit so I cannot comment on noise levels at higher temperatures, which should be worse than a traditional DSLR since the sensor is always on as long as the camera is powered up in a Live View/EVF camera. The automatic white balance is better than the D800E's as Nikon's AWB system is really only useful for color temperatures between about 4500 and 6500 degrees Kelvin. The a7R's seems to be effective from about 3500 to about 7500 degrees Kelvin. High ISO noise in RAW files is essentially indistinguishable between the a7R and D800E. Both cameras increase significantly in noise between 1600 and 3200 ISO and are well behaved at ISO 1600 and below. When downsampled to the same pixel dimensions as a 24 megapixel or lower image size, they are competitive at any ISO setting to cameras with similar pixel dimensions to the downsampled a7R file.

I am not a JPEG shooter so I will leave the analysis of Sony's JPEG engine to others. Trusted reviews indicate that Sony has come a long way in its handling of JPEG files but it is not yet quite up to the industry leaders in this regard (Fuji and Olympus) but getting close.

Using The a7R

Handling a smaller camera like this in the field is a completely different animal than a full sized DSLR of equal imaging capabilities. It is much lighter and much easier to carry on long journeys and much easier to deal with given an ever increasing landscape of airline regulations and fees. The smaller buttons and different way of shooting using an EVF takes some getting used to. Photographing with the a7R is a more slow and methodical way of photography than with the ultra familiar Nikon and Canon DSLRs that I have taken hundreds of thousands of photos with. Everything about the camera is a bit slower, from start-up time, to focus speed, to adjusting certain parameters, to shutter lag - it's all more deliberate. Shooting with the a7R is in many ways very much like the slower and more methodical shooting style of medium format and similar to the approach I use when shooting with the Phase One 645DF+ and a Phase One IQ Medium Format Digital Back. For landscape photography this slower approach can actually be a blessing in disguise as it forces you take more time to make sure you have everything right in the viewfinder. Also having a viewfinder that shows you the depth of field you are recording, shows you the areas that are going to be overexposed via the zebra stripes and shows you the areas that will be underexposed due to shadow warning allows you to get things right more often on the first shot. It is much less necessary to take a test shot, check the histogram, adjust exposure and then take another shot.

As I have already discussed earlier, the menu system can be maddening. While virtually all shooting items are easily placed on either a button or in the function menu, other items like formatting a card or changing the time zone you are in, are not and can be difficult to find in 25 pages of menu items. To simply format an SD card requires hitting the Menu button, then navigating to the 5th screen of the Setup Menu which is the 23rd page of Menu screens so it could take as much as 24 key pushes, just to get to the page where you can find Format – that's just crazy! If you enable the NEX style Menu front page, you can cut this down to 7 presses before getting to the Format item, assuming that you have memorized that it's on the 5th page of the Setup section – what were they thinking? When you are in the heat of a shoot and you suddenly need to change cards, you can't waste two or three minutes finding where to format the card. Canon suffers the same problem to a lesser degree but at least you can place Format on the Custom menu for relatively quick access. Nikon offers formatting by pushing

two buttons on the camera simultaneously without ever even needing to go into a menu – that is the way it should be done. Does anybody that designed the Sony interface actually use a camera? Many pages of menus separate some things that should be together. An example of this is aspect ratio and crop factor; they should be on the same menu selection screen. Furthermore, when something is grayed out on a menu and is not selectable due to some other function being set, the reason given for not being able to select a certain item is often incomprehensible. Sony needs a complete re-engineering of the way it handles menus, how items are arranged, and what functions can be assigned to the programmable buttons and function menu.

One thing I do not understand with both the a7R and Nikon DSLRs... Why is the auto bracketing functioned handicapped? Only Canon gets this right. On the Nikon D800E and most other models you



Watson Lake - a7R with Zeiss-Sony 24-70mm f/4

can bracket up to 7 frames but only in 1 stop increments or less. Sony's bracketing limitations are just plain dumb: You can auto bracket three exposures in 1/3 stop all the way up to 3 exposure stop increments but you can only auto bracket 5 frames or 7 frames in increments up to 2/3 stop. You can't do an auto bracket of 5 frames or 7 frames with one exposure stop between frames – this is incomprehensible leaving HDR shooters to have to manually bracket most sequences. Similarly confusing is that the viewfinder display shows an exposure scale that ranges from -5EV to plus 5EV but in manual exposure mode, only the range from -2 to +2 is used. If you set an exposure outside of that limited range, it just indicates at -5 or +5. Even in automatic exposure, the exposure compensation dial only goes from -3 to +3 yet the scale in the viewfinder goes from -5 to +5. These are silly and simple firmware code choices that make absolutely no sense to real world photographers. It makes one

wonder if anybody at Sony that makes these firmware choices has ever actually used a camera outside of program mode in a lab? These things are real in the field annoyances that hamper the photographer and should not be there in a tool of this caliber. I am not being especially harsh of Sony here; Canon and Nikon have their "in the field" annoyances too like the bracketing limitation on Nikon or Canon's over reliance on menu selectable items for things that should be instantly available from a switch or button. And then there's the fact that neither Nikon nor Canon have real mirrorless contenders to something like the a7 or a7R to begin with.

Virtually all cameras on the market today offer Auto ISO capability and so does the a7R but for some inexplicable reason, Sony has botched the implementation of Auto ISO for Aperture Priority Shooters. In Aperture Priority mode, the camera will virtually always use 1/60sec as the shutter speed regardless of the focal length used or the amount of light present. This is an absurd implementation resulting in pictures that are rarely as sharp as they could be for hand-held shooters, especially with lenses that are longer than 50mm. The way it should do this, like other manufacturers with high pixel density sensors, is to select the shutter speed based on the focal length times 2 or 3. So if you are shooting with a 100mm lens, it should select a shutter speed of 1/200 to 1/320 and then adjusts the ISO to obtain the correct exposure. An alternate approach is to allow the user to configure the longest shutter speed allowed – the a7R does not have this capability either. It will usually select 1/60 virtually guaranteeing a slightly fuzzy shot when handholding anything but wide angle lenses. If you are going to use Auto ISO, do so in manual mode where you select the aperture and shutter speed and the camera selects the ISO, or do so in Shutter Priority mode where you select the shutter speed and the camera selects the aperture and ISO. The exposure compensation wheel is available to you and will compensate with ISO if you need to bias the exposure in either direction.

The a7R does not have a built-in flash. Sony sells a number of different flash units that are compatible with this camera. Sony now uses the industry standard hot shoe configuration, not the reverse configuration of older Sony cameras. When flash is needed, I have verified that my Nikon flashes work well with the a7R in both manual mode and Auto-flash mode. TTL mode of course does not work since this is a proprietary communication scheme between Nikon cameras and Nikon flash units. I have not yet decided to purchase a Sony flash but a smaller accessory flash, rather than the huge Nikon SB-900, which is gargantuan in comparison to this camera, might be in my future. A Pop-up flash would have been nice on the a7R but there simply is no room for it due to the large EVF without increasing the size of the camera substantially. Not including one was the right choice in my opinion.

The tilting rear LCD is a pleasure to use when shooting at ground level or way over your head. While it is possible to do this with a full frame DSLR in Live View, it is way easier with the a7R due to the tilting screen. But on playback, Sony lags behind Canon and Nikon. A Sony camera cannot show you blinking highlights in a full screen playback - you only get this information in RGB histogram mode where the image review is tiny. It is very difficult to see all areas or small areas of overexposure on such a small review image on the rear LCD. Like Canon, histograms are really tiny. All manufacturers including Sony should add the line or two of code that it takes to display a full screen histogram like Nikon has always had (although Nikon fails to document explicitly how to enable a full screen histogram even though it is available). These are small, simple to implement in firmware, things that would make cameras much more user friendly.

Since the a7R has no anti-aliasing filter, in theory it should be more prone to moiré pattern interference. So far I have not detected moiré patterns on any subject in nature. I tried to create it indoors on various patterns but was unable to do so. I have seen moiré and the effects of rolling shutter in some video shot with the camera and if you are going to shoot a lot of video, the a7 with its AA filter and on sensor AF would be a better choice.

One thing I do miss on the a7R is the D800E's ability to quickly change from 36 megapixel full frame mode, to 30 megapixel 5:4 mode, to 25 megapixel 1.2x crop mode, and to 16 megapixel 1.5x crop mode on the fly. I tasked one of the buttons on the D800E to simply move through these options



Chihuli Exhibit - a7R with Nikon 70-200 f/4 (Novoflex adapter)

rapidly without ever taking my eye from the viewfinder. The Sony offers full frame 36 megapixel mode, 1.5x crop 16 megapixel mode and a 16:9 mode but the 1.5x mode and the 16:9 mode are different menu selections so you can't task a single function to quickly scroll through them. Inexplicably the 3:2 or 16:9 is a menu option under Camera Settings while the Full frame or APS-C frame option is under the Custom Settings menu - they are physically 12 menu screens away from each other - they should be on the same tab and possibly on the same menu

item. Furthermore the Full Frame/APS-C toggle option is not even available to be placed in the User defined Custom Menu, if you do want to capture a quick frame in 1.5x crop APS-C mode, you have to wade through the menu tree to find it. This illustrates clearly my earlier comments about user interface and ergonomics. There is no 5:4 option or a 1.2x crop option. Of course you can just take the photos in full frame mode and crop them later. I do tend to use these in camera crop options quite often on my Nikon bodies although more with wildlife than landscapes.

I tested the a7R's auto HDR feature and it is much more configurable than most implementations of this capability. The camera uses three shots with up to 6 stops in between each frame. As with all in-camera HDR options so far from all manufacturers, the output is an 8 bit lossy JPEG file. It would be nice if a manufacturer would provide us output in a 16 bit loss-less format file. The sweep panorama mode that Sony pioneered several years ago is also present. I have always found Sony panorama sweep super sensitive to sweep speed. It is way too easy to sweep too slow or too fast resulting in an error. It would be nice to be able to orient the camera vertically (portrait mode) while sweeping horizontally for maximum resolution in the y-axis. Unfortunately horizontal panoramas are only available with the camera in its horizontal or landscape orientation. Quite frankly the iPhone's panorama sweep mode is easier to use and less finicky but when mounted on a tripod with the panning knob loosened, one can get used to just the right panning speed and make very nice JPEG panoramas in camera on the a7R.

The first time I used the a7R in the warm beautiful light right after the sun rises, I hated how the image looked in the viewfinder and to a lesser extent on the rear LCD. It just looked way too cool. On a camera with an optical viewfinder you see that gorgeous warm light but the Sony's EVF, with the camera set to Automatic White balance (AWB) canceled that warm light out and it looked like I was looking at the scene as if it were noon. At first I was really disappointed in the viewfinder under these conditions but then I realized that it was the AWB system that was doing that, not the viewfinder. The photos also have the same lack of warm colors. Both Nikon and Canon DSLRs pretty much stop trying to correct the white balance in AWB mode when the color temperature falls below about 4500 degrees and above about 7500 degrees so photos taken right after the sun rises look OK but if the AWB system is actually effective down to temperatures in the 3000 degree Kelvin range then this would happen. I now either live with the flat colors in these situations or just set the camera to 5500 degrees white balance depending on how fast I am working. I may end up just leaving the camera at 5500 degrees all the time since I fine tune white balance for every shot in my RAW processing workflow anyway. Below is the image as the camera saw it with Automatic White Balance selected and then how my eyes saw

the scene when the sun first hit the opposite shore of this pond which was achieved by setting the camera to 5500 degrees Kelvin:



Some may wonder how I have configured the buttons and wheels on the camera for landscape photography. Wherever possible I have opted to assign a similar function to a similarly placed button or dial as my D800E for ease of switching back and forth. These are still somewhat in flux as the camera becomes more and more an extension of me as a photographer. But for now here is a summary of my configurations:

Front Control Wheel - Aperture (like D800E)

Rear Control Wheel - Shutter Speed (like D800E)

Rear Dial - unused (default setting is ISO but since this is an easy to rotate dial, it makes changing the ISO or anything assigned to it by accident way too easy)

AF/MF button – AF On (To activate autofocus)

AEL button - Auto Exposure Lock (default - unused by me)

C1 button - ISO

C2 button - image magnification both before shot and during image review

C3 button – Focus Peaking

Disp button - Cycle through available displays before and after the image (default)

WB button - White Balance (default)

Drive Mode button - Drive Mode needed - usually set to 2 second delay for landscape photography if not using a cable release (default - Single, Continuous, Bracketing, Self Timer, etc)

Unlabeled Button - Focus Setting (activates the key pad for selecting the location of the AF point)

Rear Dial Center Button – Autofocus/Manual Focus Toggle

Additionally I have placed these items on the 12 item function menu:

ISO, Smile/Face Detect, Flash Mode, Flash Exposure Compensation, Dynamic Range Optimizer/HDR, Zebra Sensitivity, Compositional grid lines (set to rule of thirds), Metering Mode, RAW/JPEG selection, Focus Mode, Aspect Ratio, and Optical Steady Shot (Image stabilization) selection. Some of these I may never use and may get replaced. I would love to be able to put SD Card Format and Date/time selection on this menu rather than having to dig through the many pages of set-up options to select them as needed.

This camera allows a nearly unprecedented level of customization in the items I have noted above and many others; however, it does not have any facility to store those settings so that they can all easily be reloaded if the camera were ever to get reset to factory defaults. This often happens if service is required or if the backup battery fails. Nikon cameras allow you to save all settings to a CF or SD card. This also makes it easy to configure a second camera. But with the a7/ a7R you will have to

completely reconfigure the camera hoping that you remember everything. Writing all of your settings down may be useful.

Here are short impressions for the different types of photography that a Nature Photographer might try with this camera:

Landscape - A great camera for this as landscapers tend to keep the ISO very low and the resolution is equal to the best in the world in this photo format. The ability to use virtually any lens from any manufacturer including Tilt-Shift lenses and exotic primes for maximum detail coupled with the low weight makes this a fantastic choice. Being able to see the actual depth of field you are shooting brightly in the viewfinder and magnify the view for super precise focus will please this type of photographer. The Manual Focus/Autofocus toggle button also facilitates this type of photography.



Goldfield Mountains - a7R with Zeiss 21mm f/2.8 (Novoflex Adapter)

Macro - Similar to landscape in that you can see the actual depth of field and magnify detail in the shot prior to taking it for precise focus and exposure control. Any Macro lens for DSLRs or Rangefinders made will work really well. The Tilt screen can also be a big plus when photographing small objects close to the ground. Using the Remote trigger app allows you to see and frame the shot then take it completely hands off reducing the chance for camera vibration.



Tea Medley - a7R with Sigma 150mm f/2.8 OS Macro (Novoflex Adapter)

Wildlife - Stationary subjects in good light with moderate telephoto lenses are no problem but since you won't have stabilization on any lens currently available (except Canon shooters using the Metabones AF III adapter with very slow AF) making sharp shots and even having enough stability to manually focus with long glass is a challenge. I tried to photograph a number of stationary birds with my Nikon 500mm f/4 and 1.4x converter but the image is just so unstable when magnifying the view for critical manual focus that I was disappointed with the results. If there were a way to power the IS it would be much easier to manually focus with the EVF. Don't even bother trying to shoot moving wildlife subjects, whether earthbound or avian. If you do get it in focus, like with the D800E, you can crop like crazy:



Lesser Scaup - a7R with Nikkor 500mm f/4 VR and 1.4x (Novoflex Adapter)

Night/Astro - While I have had some success shooting meteors with the a7R, noise does tend to build pretty fast at higher ISO compared to cameras more popular for this type of photography like the Canon

EOS 5D Mark III and EOS 6D. The resolution and small pixel sizes do demand a super steady set-up to prevent smearing points of light across multiple pixels. I have not found that using the EVF is a huge problem, not any more than an optical viewfinder and perhaps better if you crank up the gain for focus by going to a very high ISO wide open - do beware of focus shift with fast primes if you are not going to be shooting them wide open but focusing wide open.



Geminids Meteor Shower - a7R with Zeiss 25mm f/2 (Novoflex Adapter)

Still Life - I think the a7R makes an outstanding still life or product photography camera. The ability to see exactly what your photo will look like including depth of field, hot areas (use zebras), lighting quality throughout the frame, all before ever firing the shutter makes this the a7R a superior camera for this type of photography.

Underwater - Excellent underwater housings are already on the market for the a7 and a7R. While I think the a7 with its on chip phase detection autofocus would be a better camera for underwater when an ultra-wide to moderate wide autofocus zoom becomes available (Sony has promised a lens like this in mid 2014), I think either would be excellent. While I don't do a lot of this type of photography and haven't done any with the a7R, I do have a fundamental understanding of that type of photography and am friends with several serious underwater photographers that are excited for the prospects of the a7 with on-sensor PDAF for that use.

Images that I took with both the D800E and the a7R are essentially indistinguishable from each other. Since I only shoot an RAW, I did not compare JPEG engines but both cameras allow you to customize the look of JPEGs to a great extent making such a comparison essentially useless since you can make them look anyway you want. The a7R has the same outstanding dynamic range as the D800 and D800E. However, this camera will not and cannot replace my DSLRs for wildlife photography or for anything that moves due to its Contrast Detect Autofocus system and its slow 1.5 frames per second in

continuous focus mode (4 frames per second in single shot AF mode) but certainly as far as a landscape camera is concerned, it is an incredibly capable tool that won't break your back on long shoots. It makes travel; especially international travel, dramatically easier without sacrificing image quality.

Summary

There are many other features that I haven't covered since I am a Nature Photographer, not a street shooter, portrait photographer, wedding photographer, videographer, etc... There are excellent HD video capabilities and already some internationally renowned filmmakers are using it for film. It has many features for people photography including face detection that recognizes up to 8 faces and can pick an appropriate aperture to keep all of them in focus. It has many scene modes and in-camera photo finishing options that can be expanded via in camera apps that can be downloaded for effects like oil paintings or watercolor paintings and many others. It has a sweep panorama mode, auto HDR, multi-shot overlay options, digital filters, scene modes, and more for JPEG shooters. It has tethering capabilities for studio shooters. In short it combines all of the features, sans fast action autofocus, of a high-end full frame DSLR with the capabilities of an enthusiast grade compact like the world's best Sony RX100 II.

While I have critically pointed out some of the areas that could have been better on this camera, it is important to note, that every camera, including those costing much more have a similar number of complaints and inexplicable design choices. While it may not always seem so from what I have written above, I like this little camera very much but with just a little thought by the design team, it could have been so much better without any additional cost. Many of the issues could be fixed with a firmware update (see below) but will Sony, with its attention deficit disorder in its camera business, keep focused on the a7/ a7R long enough to address them? Being able to get the same image quality as the big and heavy D800E in a package this small and lightweight is fantastic. The Sony a7R has found a home as my primary travel landscape camera. Since about 90% of my landscape shots over the last 10 years fall into the 24-70mm range, this combination will get a lot of use and it is great to see that Zeiss and Sony have put forth a professional grade zoom in this range so early in this products life. My testing of this lens is in its early stages but so far it is performing well. I may add the forthcoming FE-mount 70-200 f/4 lens and will certainly be adding a wider lens when released to round out a complete landscape photography kit that weighs about the same as just a D800E and Nikon 24-70 f/2.8 lens while giving up nothing to that combination in image quality. I also have the option of using any of my Nikon mount prime lenses, zoom lenses and specialty lenses via the Novoflex adapter. Doing time lapse with the Nikon camera basically stopped the minute I learned to use the downloaded time-lapse application on the a7R. It is simply more powerful and produces a significantly better result with less work.

The only really serious problems I find with the a7R is the very short battery life and the number of button pushes required for frequently used functions that can't be programmed onto the user defined function menu.

In the end, it comes down to image quality and on that front this camera delivers absolutely stunning results in every regard with either DSLR lenses mounted via an adapter or the Zeiss-Sony lenses built for this camera.

We have covered a lot of ground in this review. Here is a short summary of the Pros and Cons of the Sony Alpha 7R:

Pros:

- Exceptional image detail and dynamic range - image quality that is virtually indistinguishable from the larger, heavier and more expensive D800E

- Huge RAW buffer of 35 shots in 1.5 frame per second continuous shooting mode and 16 shots in 4 frame per second speed priority mode
- Much lighter weight and smaller than a DSLR that has equal image quality
- Very good WYSIWYG EVF with tons of information right in your eye
- The ability to use zebra patterns at varying threshold levels to determine overexposure prior to the shot
- Focus peaking and real time focus magnification makes manual focus a breeze
- Compatibility with almost every 135 format lens ever made via an adapter
- Adobe lens profiles work well for non-Sony lenses on images taken with the a7R
- Highly customizable
- WiFi and NFC capabilities
- Remote trigger app that comes pre-installed on the camera
- Excellent time-lapse and intervalometer capability with the purchased time-lapse app for the camera and the capability to further expand the camera with downloadable apps
- Excellent all metal professional grade build quality (except the battery door)

Cons:

- Poor battery Life
- Charging is in camera only and very slow without additional accessories - a stand alone charger is not included. Dedicated charging requires an additional charger purchase
- The included manual is useless and the downloadable interactive help guide is very difficult to navigate and incomplete
- Power-up and wake-up from standby is very long and inconsistent
- Poor autofocus performance on actively moving subjects
- Poorly conceived menus and related function fragmentation among multiple menu pages
- Handicapped Auto ISO in Aperture Priority mode
- RAW files that are not lossless
- The pre-installed remote trigger app does not work in Bulb mode
- The shutter button is mushy and doesn't have a positive tactile feel
- Metering system is biased towards under-exposure
- Artificially restricted auto bracketing
- Lack of native full frame E-mount lenses
- Exposure compensation dial can't be re-tasked for manual exposure shooters
- No pop-up flash
- USB port is USB2 not the much faster USB3
- Automatic White Balance treats warm post sunrise and late pre-sunset light very poorly

Suggested Firmware Fixes (A=High Priority, B=Medium Priority, C= Nice To have):

- Reduce Power on and Standby on times (A)
- Implement true lossless compression of RAW files (A)
- Remove the artificial auto-bracketing restrictions (A)
- Put all crop modes on the same function rather than separating 1.5x crop from the other crop modes (A)
- Fix Aperture Priority Auto ISO and allow the user to determine the slowest acceptable shutter speed (A)
- Allow any function to be assigned to any programmable button, not just shooting options (A)
- Add option to save camera settings to the SD card (A)
- Make a smaller focus spot size available for higher precision autofocus (B)
- When delayed shutter modes are selected via the self timer function, close the shutter immediately, then wait for the duration of the self-timer and take the shot to reduce shutter induced vibration (B)

- Require a half press to cancel viewfinder magnification rather than touch detection (B)
- Improve Focus Peaking precision (B)
- Enable the full -5 to +5 metering scale in the viewfinder rather than displaying -5 to +5 but only using -2 to +2 in manual exposure mode and -3 to +3 in Aperture and Shutter Priority modes (B)
- Allow Exposure Compensation dial to be re-tasked (B)
- Eliminate the first screen that draws a bounding box when focus magnification is selected (C)
- Allow different displays on the EVF and the rear LCD (C)
- Add additional crop modes like 5:4 and Square (C)



Watson Lake Panorama (8 frames) - a7R with Zeiss-Sony 24-70mm f/4

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