

PHOTOGRAPHER'S NOTES ON DSTRETCH AND PHOTOSHOP®

One of the reasons that many of the pictographs in our two books have not been previously published is that they are too faint to visualize with the unaided eye or even with available software enhancement, such as Photoshop® (PS). Sun exposure, aeolian or pluvial forces, sand, habitation damage such as touching, fires and grease all denigrate rock art. There is also the inevitable breakdown of the substrate rock, which is nearly always granitic for pictographs in the Kumeyaay and Patayan area. As for the paint, the mineral component of the pigment such as ochre (*sensu lato*, iron oxide) for red, orange or yellow, manganese or charcoal for black, and calcium carbonate or talc for white is durable, but the organic fixative or emulsifier may not be. Many of these pictographs have significantly faded since the initial photographs of Malcolm Rogers in the 1930s to the early studies of Ken Hedges in the 1970s and then, again, since our photography in the past few years. In general, petroglyphs are more durable, but fade overtime due to the reaccumulation of desert varnish. Realistically, if we were to present the pictographs as they actually appeared onsite, most of them would be poorly resolved, barely visible or invisible altogether.

As we have previously mentioned, all of this changed with the advent of DStretch (DS) by Jon Harman. The details on DS can be found on his website along with tutorials and other information. (<http://www.dstretch.com/>). Also, please see our own Daren Sefcik's DS site at (<http://www.sefcik.com/2012/10/dstretch-tutorials-getting-started.html>) for some very helpful guidance. Currently, there are various means to utilize DS: on a computer or tablet, with certain Canon cameras, and with an iPhone or an Android phone. The specifics are listed on the DS websites. The computer software is free for "amateurs" although \$50 is suggested for professionals or those who wish to donate to Harman.

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For *Volume 1* I used a Canon G12 model that I bought new for \$300 with a swivel LCD screen and a 10-megapixel sensor. The list of which Canon's cameras are compatible with DS, you can get from Jon Harmon. He will also load your photocards with DS for \$100. The Canon produced DS images in the 3–4 Megapixel range when shooting in rockshelters which is inadequate quality for most uses. Since I had a much larger sensor on my Nikon D7100 (or any quality DSLR), I only used the Canon as a "screening device" and not for making final images. The next substantial improvement was with the advent of a DS application for the iPhone or an Android phone which is \$20. Notably, the iPhone 8 or 8 Plus in the recent past, or currently, the Xr and Xs iPhones have a 10–12-megapixel sensor and the LCD screen is larger and much sharper than the Canon cameras.

The Xr, Xs and the 8 Plus iPhones all have wide angle, panoramic and telephoto options and a larger LCD screen that enhance their utility for rock art and landscape photography. While I still mostly use the phone as a screening device, I believe it captures much more detail than the cameras that can accept DS. In short, there is little to recommend in the DS Canon cameras. Therefore, I currently use the iPhone with DS as a screening camera to locate rock art and then a DSLR camera for final images. While the iPhones are amazing tools, they

cannot compete with a quality digital camera where your lens is nearly 3" across (77mm) and the sensor size is more than 20 MB and increasing. Some of the images in our book are 40–60 MB or larger.

Finally, many professional photographers summarize camera technology as follows, the camera is a “box” that has helpful features, but the quality of your photograph is directly correlated to the quality of your lens. For this book we mostly used a Nikon AF-S DX 10–24 f/3.5–4.5 lens whose price has recently dropped to under \$1000. Although that is a lot of money you will be very happy with your rock art and landscape photographs. The full frame (FX) counterpart is about \$1,600. If you want better pictures, I recommend spending time on Ken Rockwell’s website (<https://kenrockwell.com/index.htm>). He can help you with equipment and methodology.

On a DSLR I use the JPG setting on the highest quality for the camera, although others recommend RAW or TIFF formats. Also, I keep the ISO set as low as I can (i.e., 160) considering that much of our work is in dimly lit rock shelters. The effect of flash is somewhat unpredictable, so I generally shoot all pictographs with and without flash. Slow synchronization flash often produces a better-quality outcome especially if you are



close to the artwork. Always be aware of the great spectrum of contrast in many of these shots which flash can help attenuate. I have read that the human eye has a dynamic range of about 20 stops of light, whereas a camera can only handle about 10–12 stops, meaning that a camera’s ability to process contrast is far less than our vision. Experience is probably your best teacher in this regard. Another way is to check is by your camera histogram for burn out or black out.

A gold fabric reflector is ideal for many rock art situations if you have the discipline to carry one and the situation will allow you to bounce light onto the artwork. If the autofocus will not work in the low light, then I use manual. I almost always carry a tripod and use a 10 second timer setting on my camera because of the longer exposure times. Finally, and I sometimes forget, remember to retain an adequate depth of field, especially with closeups and slanting rock surfaces which are usually present. While the rock art may be the centerpiece of interest in your photo, an out of focus rock surface can ruin your image. You have nothing to lose by taking images at several increasing f-stops which will also increase your shutter times, sometimes necessitating a tripod, flash or a higher ISO. At this point, I have not had to combine or stack different exposures to make composite photographs, but this technique could be useful for landscape images incorporating parietal rock



shelter art. I can often overcome the disparity in light with fill flash and exposure lock settings.

Since others have written on DS itself, there is no need to repeat that here except for one point I wish to make. DS makes use of a wide variety of colorspace. Fortunately, DS performs well with red (or the very rare orange) or black, the two most common colors for La Rumorosa pictographs. The response of other colors such as white, yellow, green and blue is more variable. Of these four colors, white and yellow are the two most often seen. This concept is useful for stratigraphic analysis due to the overpainting that regularly occurs. The selection of colorspace in DS technology will often amplify certain colors while suppressing others. This allows some assessment of the sequence of pictographic pigment application and a true spatiotemporal analysis by using multiple colorspace.

The photographs shown here demonstrate how different DS colorspace illuminate subsets of a pictograph panel composition. This site in Blair Valley has at least three pictograph layers on the same wall and DS reveals an amazing array of artistic expression. In other words, if we chose only one DS colorspace, we would not necessarily observe all the pictographs painted at a given time, because we are selecting by color. Because we are selecting by color, we are potentially altering the composition we see photographically.



DS becomes more useful when selecting custom colorspace setups that are available to any DS user. This can take an inordinate amount of time to elicit the optimal outcome, but such precise settings can enhance your results when attempting to reveal the maximum array of all the pigments of a given painting. Surprisingly, if a pictograph contains both red and black elements, I have found that none of the standard DS colorspace captures them reliably. If a pictograph panel is important, I keep several versions of a panel using different colorspace, strengths and custom setups. Many times, when I think I have captured a pictograph panel, I will try additional DS channels to be surprised with additional elements.

In the pictograph panel photographed on page 38, I visualized what is captured in the far-left photograph in the morning light. Since the scene was backlit, I used PS to improve the light on the pictograph and darken the sky in the second photograph. I could have done the same thing with fill flash and AE lock. In the third picture I set DS to capture red pigment. Next, when I set DS to reveal the black color, we see the grids as seen on

page 39. In the final photograph, I derived a custom DS color space and multiple pigments are more apparent. The significance is that DS, depending on which colorspace you select, you may alter the composition and visualization of your final image. Sequential painting layers are a fairly regular occurrence in the La Rumorosa territory for various reasons that include redundant site location and power enhancement.

As an aside, imagine the difficulties that would be encountered if one were to try to carbon date this pictograph area. Wherever you sampled, you would need to isolate the specific pigment that belonged to a singular layer and presumed time period. If this could be attained, you could end up with an amazing chronology for each painting episode of the panel. Conversely, if one proceeded to date a pictograph panel without realizing that there were multiple layers of pigment in the same geographic space, your results could be erroneous. This is another useful application of DS when considering chronometric dating.

Because of a wide latitude of light in many of our exposures, we have used PS® to correct for inadequate or overpowering contrast in lighting and to attenuate some of the wild colors rendered in DS that can obscure some aspect of the pictographs. The only intention here is to improve the clarity and resolution of the artwork. We have not supplemented the artwork or changed it in any other way. When given the choice, we selected the pictograph images which seemed the most meaningful in the context of this book. For a given image we hope this explanation will make clear that it is not the only possible outcome. When customizing DS, using a subset of slider selections and additional DS modifications, we have attempted to include the maximum range of colors or what we considered the most interesting to our readers. We have retained both sets of images, i.e., DS alone and DS plus PS® for our records and for posterity. An example of this PS® improvement is seen in photographs five and six. This is a typical change within the modifications made for this work.

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We hope this discussion has been helpful to you in your quest for better rock art photography.

Don Liponi