

High Dynamic Range, HDR, Photography Processing - A Visual Experience

NVPC April 20th, 2011 - Presented by:

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This will be a visual experience and will definitely not be a technical presentation of achieving a finished image of extraordinary depth of detail from photo realism to artistic expression. Different software methods and tools will be used to get a final output in a live on-screen demonstration. The program is targeted for P&S and DSLR photographers of all experience levels hopefully encouraging an additional avenue to further explore imaging and art of interest.

At least three software tools HDR Soft's "Photomatix Pro", Nik Software's "HDR Efex Pro", and Adobe's "Photoshop via HDR Merge" will be demonstrated with images from each of the three presenters. None of the presenters consider themselves experts along the learning curve or efficient but are willing to share their learning to date and thoughts while they process their images captured for HDR purposes.

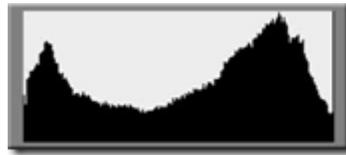
HDR Image Capture and Processing Primer

A Primer of some basic image capture DOs and DON'Ts follows to facilitate the capture and post processing Workflow:

What is HDR?

HDR stands for High Dynamic Range. We generally consider using this technique for images that have Shadows and Highlights that are beyond the sensor's capabilities.

An example Histogram:



We can see here highlights are “blown” and shadows are “blocked up”, an indication that HDR or alternative processing techniques might be used to bring out the details in this extended range. If an image fits within the limits of the sensor, HDR techniques are general not necessary except for special effects.

There are two broad rendering intents of HDR processing, “Photorealistic” and “Artistic”

- Photorealistic attempts to reveal what the scene looked like to the makers eye
- Artistic meant to be more like “Art” and not necessarily represent the actual scene.

Some example scenes that are generally good for HDR:

- Bright sunny day
- Night scenes
- Indoor scenes where bright sun is visible through windows
- Outdoor scenes with highly reflective elements such as water falls in heavily forested scenes

General Workflow:

- Initial capture - bracketed range or single image (some HDR processing on a single exposure is possible)
- Minimal image prep in RAW development or pre-HDR processing of captured TIFFs
- Save As TIFF files
- HDR software tools to create a combined image of high dynamic range exposures (in 32 bit and then converted by software to 16 bit)
- Final image processing in Photo Shop
- Save completed image ready for output

Image Capture:

DOs:

- Capture images as RAW or TIFF in 16 bit if possible
- A tripod capture is preferred, but hand held captures are also successfully used
- Capture bracketed images all at the same aperture to maintain consistent depth of field
- Capture at lowest ISO setting that yields high enough Shutter speeds to avoid motion blur due to subject motion or photographer
- Bracket captures so that the darkest shadows have detail (expose to the left - HAS many Blinkies) and the brightest highlights (non-specular) have detail (expose to the right - NO Blinkies)
- For capture bracketing, manufactures suggest shoot at the nominal (correct) exposure and then +/- 1ev or +/-2ev in 1ev increments for a three or five exposure series respectively. A larger range of bracketing might be needed for some very high range scenes or the photographer may choose smaller increments of the bracketing.
- Use high speed continuous shooting to capture the bracketed exposures so as to reduce the motion of leaves, etc. between exposures (some HDR software provides tools for motion blur/"ghosting" removal or for major elements in the capture to various levels of success)
- Use the largest color space of your camera if TIFFs are your file spec (in contrast to RAW which does not matter), i.e., Adobe RGB or ProPhoto RGB
- Avoid breezy scenes when tree/leaf motions, waves, or flag motions are very significant if the amount of blur is not desired (note: you can repair some large levels of motion between exposures level of "ghosting" in Photo Shop post processing through masking with originals if necessary)

DON'Ts:

- While you could use JPEG files, it is not recommended (because of bit depth, color space, noise, auto image processing and final compression).
- Use sRGB for TIFF captures

Initial Image Processing

DOs:

- Use 16 bit color space in as large a color space as you can (Adobe RGB, ProPhoto RGB, etc.)
- Use exactly the same White Balance for each image in the bracketed set
- Use lens specific Distortion and Chromatic Aberration Corrections if necessary
- Remove image sensor dust bunnies from each image of the exposure set (hint: start with the brightest exposure and as you remove them remember the number of dust bunnies and their locations, then search carefully to remove all of them from each of the other images in the exposure set ... it becomes difficult in the darker images to locate them but is important for greatest image quality in the HDR image.)

- Remove excessive low level light Noise from the respective images in RAW development or in the respective TIFF file(s) after initial capture processing but before HDR processing (note: this is important since the HDR process brings out contrast, thus sharpening the noise)
- "Save As" TIFF 16 bit with embedded color profile and No compression
- Use Noise removal if necessary from only those low light exposure if it not done in RAW
- Use Noise removal if necessary from only those low light-exposure if not done in RAW

DON'Ts:

- Make any "Scene" type adjustment such as Portrait, Landscape, monochrome, Vivid, etc.
- Make any Exposure, Highlights, Shadows, Vibrance, Saturation, Brilliance, etc. adjustments
- Make any sharpening (HDR inherently sharpens via its contrast)
- Make any Masking adjustments
- File save as an sRGB or 8 bit file (HDR software needs 16 bit to do its job well)

HDR Processing

HDR processing can begin as a standalone tool, integrated in Light Room, or used directly from Photo Shop. Each initiation point will be demonstrated by the Presenters.

Retail HDR software will combine your exposure images in 32 bit mode in order to have enough detail/color bit depth. They will then use various algorithms to process the image set. There are user choices as well as "presets" from which user may wish to start. Processing through these software tools will be a visual demonstration as to various choices and with the Maker's comments as to why he made the decisions that result in the final HDR image.

Final Output Image Processing is done in Photoshop

Major HDR Processing Software Suppliers:

Commercial Software (free trails available)

- HDR Soft - "Photomatix Pro" - free tutorials are available www.hdrsoft.com
- Nik Software - "HDR Efex Pro" - free on line training available in both basic and advanced/details mode www.niksoftware.com
- Adobe - "Photo Shop HDR Merge" within Photo Shop www.adobe.com

Free Software

- HDR PhotoEngine by Oloneo Software (note: FREE now until May 31st) www.oloneo.com
- Essential HDR Community Edition - www.imagingluminary.com
- FDRTools Basic - www.fdrtools.com
- Picturenaut - www.hdrilabs.com

Reference Materials

[HDR Notes](#) by Sam Galpin April 28, 2010 - www.nvpcweb.org