

HDR - What's all the Hoopla?

INTRODUCTION

Is this a fad or will it pass the test of time? Some of the early products of the new HDR (High Dynamic Range) software had a horrible look. But over the past two years photographers became more educated to its real significance. It has solved a problem as old as photography itself—how to get both highlight and shadow detail in the same frame without too much work.

Cameras have never been able to capture the full range of tones that were visible to the human eye. Various attempts were made to overcome this shortfall by using various methods long before the newest software became available. Some of us "old school" photographers would make several bracketed exposures in our 4x5 view cameras, and then "pin register" the best part of each negative into the print. That was long and tedious work, and mostly avoided. My point is, we were very much aware of the loss of detail in the shadows and highlights of many images.

Then along came technology—and we no longer have the excuse of time constraints for not making the perfect picture.

When HDR images first slapped me in the face I reacted with a curious resistance. It didn't take long for me to take notice of its possibilities. I now teach HDR to advanced students at DPA (Digital Photo Academy)—a national school of photography located in 22 US cities.

Description:

- Dynamic range is the complete range of tones from the brightest highlights to the deepest shadows. It can be measured in the span of f/stops or EV.

Dynamic Ranges:

Bright sunlight contains	100,000:1	~17 EV
The human eye captures	10,000:1	~14 EV
Camera image on film	2,000:1	~11 EV
Camera digital image	400:1	~8.5 EV

The day may soon come when digital sensors will be engineered to record the complete dynamic range of reflected sunlight in one exposure. But until that camera model becomes available we will use the computer to assemble the range of tones from multiple exposures. My hunch is that the present HDR process will remain as medium for artistic expression.

- With the tools we now have at our disposal we can choose to be either realistic/natural or artistic/surreal in our approach to HDR processing. Compare the accentuated HDR results on pages 4 and 5. Do you want the realistic or artistic work?

EQUIPMENT PREPARATION

Preparation in camera:

- Select a subject that needs help. A subject that has deep shadow detail and where detail is needed to tell the story. A well-lighted, uniform density subject doesn't need the HDR treatment unless you are looking for some of the artistic values of the process..
- Mount the camera on a sturdy tripod. HDR images can be made with hand-held exposures, but first do a few with a tripod.
 1. Use the "Aperture Priority" (Av) automatic exposure setting on your camera. This will prevent any changes in Depth-of-Field.
 2. Set your camera's Exposure Compensation Scale to "0."

- Set the "Automatic Exposure Bracketing" (AEB) mode to +2 and -2 f-stops.



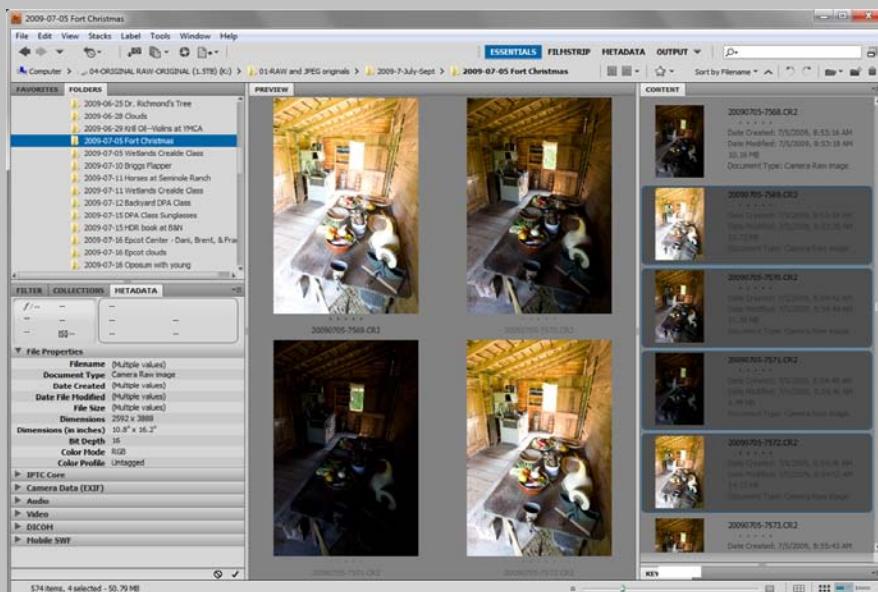
- Set your camera's exposure mode to "Continuous."
- Take one set of three exposures. Immediately followed by two more sets of exposures. One setting the "Exposure Compensation Scale" to -1 and one at +1.
- You will then have 9 exposures at 7 contiguous f-stops (2 will be duplicates). If you are shooting outdoor subjects, it is important to expose as quickly as possible. Cloud movement becomes very apparent in the finished product. If there are people in the scene, try to get their cooperation to stand still for the duration of the exposure sets.
- Check exposures with the histogram to be sure that all of the important shadow detail is very apparent in the lightest exposure; all important highlight detail appears in the darkest exposure.

Tip: Although HDR images can be made from JPEG files, the best results come from RAW.

PROCEDURE

Image selections in the computer:

- Using any imaging software, select 3 to 5 exposures that include the best highlight detail in the darkest exposure, and the best shadow detail in the lightest exposure. The other exposure(s) should contain a happy medium range of tones.



HDR software:

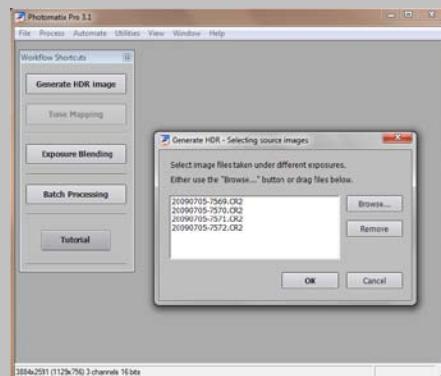
As much as I love Photoshop, I found the Photoshop HDR function to be slow and frustrating. FDR software is said to be better for removing or controlling motion artifacts. If you are photographing people in HDR settings this may be the best choice. However, Photomatix seems to be the most popular HDR software, so the examples below will be using it.

Photomatix will try to give you an average mid-tone throughout the image by simply using the darkest parts of the lightest image and the lightest parts of the darkest image, and fill in the mid-tones according to what is next to each tone. The first result is a piece of art created by a machine. Don't let a machine steal your job—that has been tried before. Use the sliders to adjust the image.

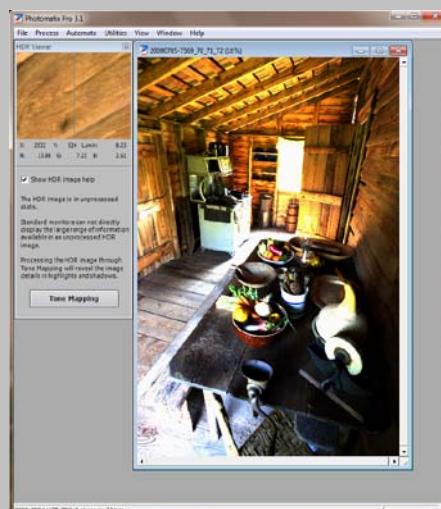
You will soon discover that each slider is very dependent on the other sliders. If you move one slider and not much happens—then move another and a lot happens. Then you go back to the previous slider—and oh-my-gosh—something different happens. When you come back to sanity, you may realize that the sliders are effective on only one or two of the tone ranges, and when you adjust one of the other tone functions of a different but overlapping range, it changes the previous slider adjustment. Also, each image set that you put into Photomatix will demand a different set of slider adjustments depending on the overall density ranges of the individual image components.

It is also worth noting that the more individual image components you make, the more subtle the density ranges will be, and the smoother the density ranges will be in the finished product. Two or three will work fine in many cases, but may result in halos around the darker areas of the image. Five to eight components are much better, but take much longer to process.

- Open Photomatix and drag these images into the software's window. Select "Generate HDR image." (Note: Photomatix may also be used as a plug-in to Photoshop or Lightroom.)

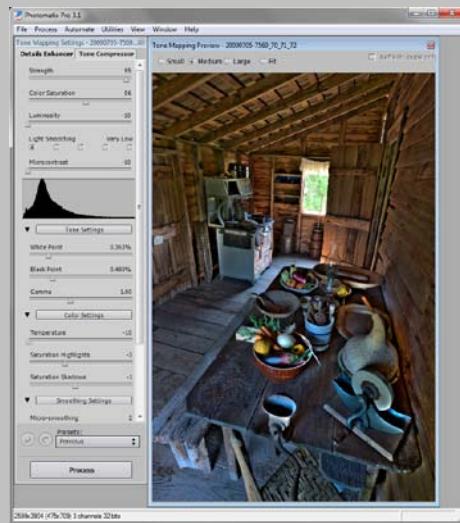


- When the new window appears with your selected files, click OK.



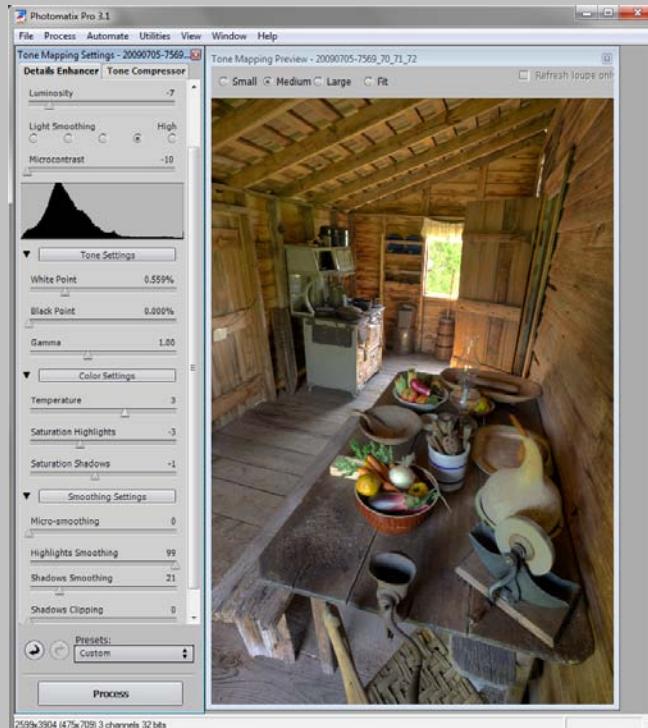
The first image you see will look awful. It is merely an unmapped collection of your selected images. Immediately click on "Tone Mapping."

- A new image will appear containing the mid-ranges of your selected images.



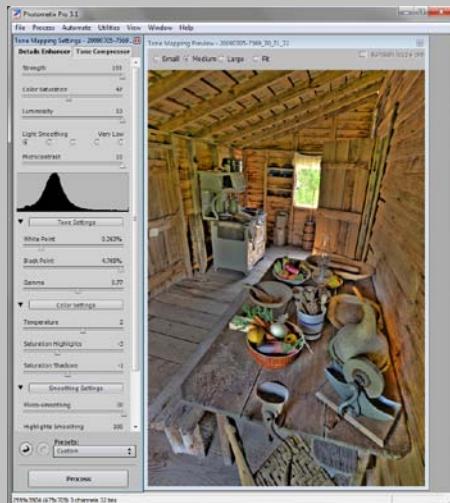
- The example below is the result of very little adjustment. The Luminosity was moved up only 3%, and the Black Point was pushed down to "0." In this case the reducing Black Point was more effective in brightening the image than the initial Luminosity slider move.

The Light Smoothing was pushed up to the fourth position toward the "High" button. Light smoothing is desirable to reduce halos and contrast between tones, but too much will cause flatness. The result was a realistic, natural image.



Realistic

- To gain a more artistic look to the image I pushed both the Luminosity and Black Point sliders all the way to the right. This gave the image a bright but dark outlined look. Advancing the Light Smoothing to the "High" position brought more "local" contrast to the details of the image.



Artistic

My choice for this image is the realistic rather than the artistic look. It tells the story of a historical location at Fort Christmas, Christmas, Florida.

CONCLUSION

With each HDR image you work through Photomatix or other software you will at some point determine that you've maxed the capabilities of the software and it still isn't quite what you wanted. If you are at least satisfied with the balance of tones and overall smoothness, then simply say "that's all I can do here" and click the "process" button at the bottom of the panel. It's time to do the final enhancements using the standard Photoshop techniques.

SUMMARY

The above information and procedural steps are current methods that are bound to soon become obsolete as far as general photographic practices are concerned. Camera manufacturers will very soon release new technology that will feature camera sensors capable of capturing density ranges equal to human vision in one frame. But please take notice of the some of the more creative HDR work done by current photographers. The *hoopla* or *fad* period will end, but the creative work being done with Photomatix techniques will go on as a worthwhile creative medium.

For more information on HDR go to:

- http://www.miltonheiberg.com/Upcoming_events_PHOTOGRAPHY-WORKSHOP.htm
- http://www.photoshopcafe.com/tutorials/HDR_ps/hdr-ps.htm
- http://www.secondpicture.com/tutorials/photography/hdr_tutorial.html
- <http://www.stuckincustoms.com/hdr-tutorial/>

For courses in HDR and all Photography:

- <http://www.digitalphotoacademy.com/>