MUENCH WORKSHOPS

Shooting Handheld Panoramas

A Broader Perspective

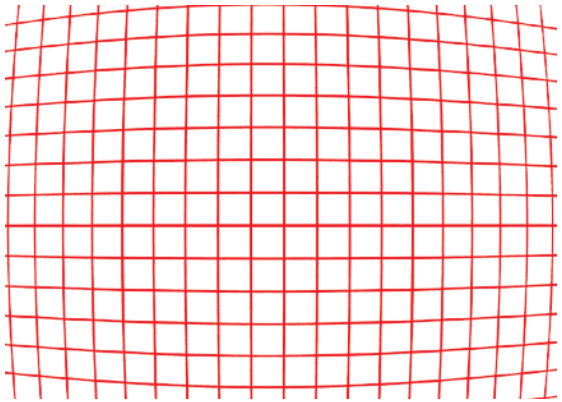
By Lisa LaPointe

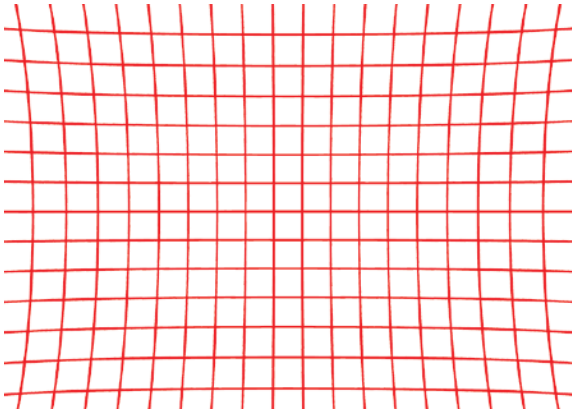
Large high-resolution panoramic images can be easily created by stitching together multiple images, without the need for specialized cameras, lenses, or other equipment. This technique is much better than cropping a single image into a panorama because the final image will have a much greater resolution and detail. It's also a useful technique for when your lens is too long to capture the whole scene in one shot. Here's how to get started.

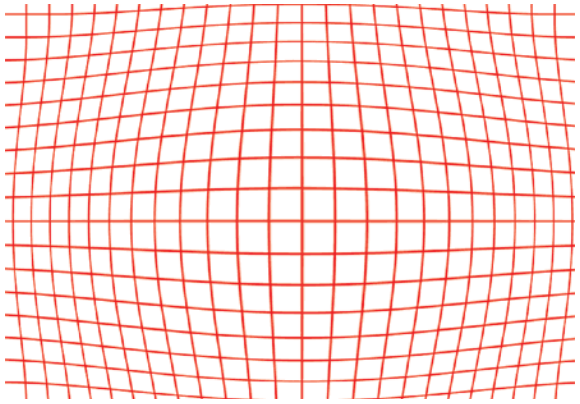
Shooting Your Panorama Image

Selecting a Lens

Because you'll be stitching together multiple images to form your panorama, you'll get the best results when you minimize distortion in your source images. The easiest way to do this is to use a "standard" focal length lens, such as a 50mm. Wider lenses will often produce barrel distortion, resulting in curving lines in your images that can be difficult to align into a panorama (below left). Longer lenses will often produce the opposite effect, called pincushion distortion (below middle). Both effects are types of optical distortion and are a result of optical design in the lens elements. In general, zoom lenses have more lens elements than primes, and so typically produce more distortion. While some lenses have more distortion than others, sticking with something in the standard range is a pretty safe bet. If you do end up with distortion in your image, you can apply corrections in Lightroom or Photoshop. Most lens profiles are already built into these programs and distortion can be eliminated with a couple of clicks. Note: some older lenses exhibit more complex forms of distortion (right), and these may not be easily correctable with software.







Shooting Level

While a tripod with a panning head is a useful tool for shooting panoramas, it is not necessary to achieve good results. Shooting a panorama handheld, though, does require a bit of attention and practice. Select a horizontal line in your image (the horizon works well) and try to keep that line at the same level in each image as you move across your field of view. Turning on the grid function or the level in your camera can help. Most of us have a tendency to pull down on one side or the other.

Minimizing Parallax Error

Parallax error is a perceived shift in an object's position when seen from different angles of view. If this sounds unfamiliar, look at an object near to you. Now take turns closing one eye, and then the other, and notice how the object appears to move. Also, notice how turning your head from left to right causes an object you are looking at to shift relative to its background. That's parallax error. Why is it important to consider when making a panorama? Parallax error can sometimes cause your images to not line up correctly, and the software may struggle to combine them. While a special piece of tripod-mounted equipment, called a nodal slide, can prevent this, you can minimize parallax in your handheld images by placing yourself at a distance to your subject. Nearby objects will exhibit more parallax error than farther ones.

Maximizing Pixels

Maximize the number of pixels from top to bottom in your final panoramic image by shooting your component images vertically. It sounds a bit counterintuitive for a horizontal panorama, but it will allow you a little error room on top and bottom if you don't stay completely level as you shoot.

Light Metering for Panoramas

Because light enters the lens differently at different angles to its source, letting the camera set the exposure for each frame may result in a series of images with different exposures. To avoid this, you'll want to shoot your panorama source images in Manual mode. Once in manual, meter off the brightest part of the scene to avoid blowing out highlights in your final image, then leave that setting the same for all of your component images.

Focusing for Panoramas

As with lighting, you want to maintain a consistent focus across your image. Refocusing in each source image will nearly always result in a final panoramic image with multiple focal planes if a final image can be combined at all. To avoid this, focus on one object (usually the most significant element in the image and/or something near the middle), then do not refocus for the entire series of source images. If you are using back-button focus, take your finger off the focus button. If you are using your shutter button for focus, focus once, then flip the focus selector on your lens from autofocus to manual focus.

Putting It All Together

1. Set your camera to manual exposure and meter off the brightest part of the image.

2. Autofocus on your chosen focus spot, then switch to manual focus so your focal point won't change.

3. Turn your camera vertical and shoot left to right, or right to left— it doesn't matter! For best results, overlap each frame by 50%.

4. Shoot a second row if you are feeling ambitious! Overlap the top and bottom rows by 50% as well.

Helpful tip: You may wish to shoot a specific image (for example, your hand) at the beginning and end of the panoramic series. This helps to identify the series more easily later and avoids inadvertent deleting of images.

Processing Your Panorama Image

Now that you've got your images, it's time to combine them in post-processing. While there are several different software programs for creating panoramas, we like to use the simple, powerful version available in Lightroom Classic. Here are your next steps:

5. Import your images into Lightroom, and process one image as you like, but keep it simple: basic adjustments to **exposure**, **contrast**, **white balance**, etc. You can make local adjustments to the final image later.

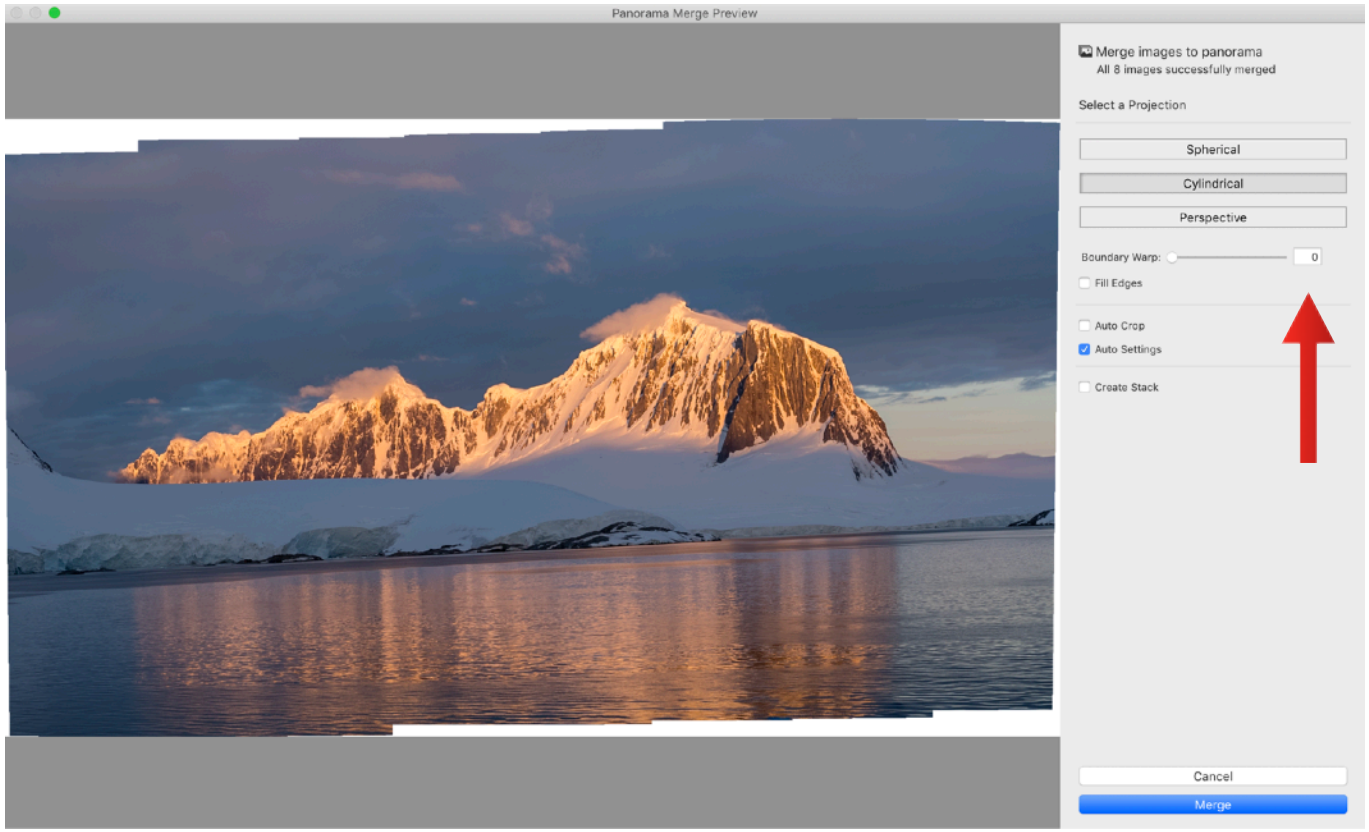
6. Sync the processing you did to your one image to all other images in the series. To do so, return to the Library module, click on the image you edited, then press **Control** or **Command** to select the rest of the images in the series. Click on **Sync Settings** in the right-hand column, and select the menu items you'd like to sync (or deselect the ones you don't).

7. Select all of your component images, then right-click **Photo Merge>Panorama**.

8. Select a projection, and Lightroom will create a preview of your panorama.

Which projection should you choose? Sometimes the best approach is to just try different modes and see which one looks best, but here are some rough guidelines to start with:

- **Spherical**: tends to work best for **multi-row and 360°** panoramas.
- **Cylindrical**: Prioritizes keeping vertical lines straight, and tends to work well for **very wide panoramas**.
- **Perspective**: prioritizes keeping all straight lines straight and tends to work well for **architectural photography**. Typically *not* the best mode for very wide panoramas.



Regardless of your choice, you'll likely see some uneven white border around your image. Selecting **Auto Crop** (or cropping yourself later) will result in some loss of your image, so a better option is to use boundary warp to stretch your image to the frame.

9. Drag the **Boundary Warp** slider to the right until the white border disappears.

10. Click the **Merge** button to finish your panorama.

After you click on Merge, Lightroom will do its magic (be patient!) and your image will appear automatically in your Lightroom Library. You can then use the Develop module features to crop, straighten, apply adjustments, etc. Remember that your image file will be big—panoramas created this way are often tens of thousands of pixels or more in length. On the plus side, you'll be left with a detail-rich image that can be printed very large, or cropped in various ways for various applications. Below is my final panoramic image, a product of 8 individual component images:

Voila! The last light of the day on mountain peaks, Antarctic Peninsula.

Happy Shooting!