Photoshop Elements 3 – Panoramas

One of the good things about digital photographs and image editing programs is that they allow us to stitch two or three photographs together to create one long panoramic photo – something that was only possible with expensive specialized cameras in the past. Creating panoramas requires thought both when you shoot and when you modify the images though. It seldom is possible to blindly shoot a few images and then to miraculously put them together in a great-looking image. This lesson will emphasize both shooting the pictures and stitching them together.

For the in-class lesson today you may skip to page 3. The first two pages give directions for shooting panoramic pictures.

**Shooting: Camera Position**

First, you must use a tripod if you expect to get good panoramas. You also should make sure that the camera on the tripod is as level as possible. You don’t need an expensive panoramic or VR head for the tripod, but it is helpful to have some way of gauging whether the camera is level when mounted on the tripod. I keep a small level (about the size of a half-dollar) in my camera bag for this purpose. It isn’t perfect, but it helps.

When you have found a scene you like, set up the camera and tripod. Rotate the camera back and forth while looking through the viewfinder to ensure that the horizon remains level. In my limited experience, this is easier said than done, but I try.

If you do not have a tripod with you, all is not lost. Try to use a feature in the scene that remains horizontal for all the shots as a guide.

**Shooting: Use the Same Focal Length for Each Shot**

As you rotate the camera, also check the zoom to make sure that you will capture the part of the scene you want to have in your panorama. A wide-angle setting is preferable because it gives a larger depth-of-field. **Do not change the zoom when you take the pictures for the panorama.**

**Shooting: Use the Same Exposure for Each Shot**

**Do not use the automatic exposure setting on your camera.** Instead use the **Manual mode** to set the camera’s exposure (aperture and shutter speed) yourself. If you choose automatic exposure, you may get a different exposure setting for each picture, which does not help much when you try to stitch the pictures together. Choose an average exposure setting that will give good detail in both highlights and shadow areas.
A narrow aperture (high f-stop) is preferable because it gives a larger depth of field. If you are using a tripod, it will not matter if the narrow aperture requires a slow shutter speed.

If there is a wide variation in brightness between scenes, so that setting an average exposure is impractical, take two exposures for each camera position – one exposed for the highlights and one for the darker portion of the image. Later, you can combine the properly exposed sections of the two different exposures to give a properly exposed combined image for each camera position. You then can stitch the properly exposed combined images together to make the panorama.

**Shooting: Focus**

*Do not use automatic focus.* Instead, focus the camera manually, so that the focus is consistent from one camera position to the next.

**Shooting: Camera Rotation**

Shoot the pictures as described below:

1. Start on the left and take the picture at that position
2. Note a reference object, such as the building in the two views shown below, in the right side of the first view
3. Rotate the camera so that the second view overlaps the first view by 30 – 50%
4. Take a picture at the second position.

1. View # 1

2. View # 2

5. Continue rotating so that each view overlaps the previous view by 30 – 50%. Take pictures at each position.
Shooting: Other Considerations

When you are ready to take your pictures, look around. Are there any moving objects, such as an automobile, airplane, or animal approaching? If so, wait for a moving object to move through the frame before taking a picture.

If the image contains mixed light sources (e.g., light from a window and from an incandescent bulb), you may want to shoot duplicate shots of each view with different white balance settings.

Photomerging to Create Panoramas

In this lesson we will work with five images:
- Cemetery1
- Cemetery2
- Cemetery3
- Cemetery4
- Cemetery5

These images were taken sequentially with a Nikon D70 mounted on a tripod that had been leveled (not entirely successfully) with the camera set for manual exposure and focus.

I have preprocessed each image to make them easier to stitch together:

- Resized each image as 1203 pixel x 800 pixel (around 1 MP) so that the files will be small enough not to take a lot of computer time to process.

- Adjusted brightness and contrast of each image with Levels

Open each file and save it as a PSD file.

Close all the files.
Merging Pictures

Choose **File, New, Photomerge Panorama** from the main menu.

In the **Photomerge** Window that opens up, browse for the files and enter them in order one at a time.

Click on **OK**.

You will see the images appear on the screen and eventually the Photomerge window again with the tentative version of the panorama.
Move the **Zoom slider** below the **Navigator** window to zoom in and out on the merged image. You also can use the **Zoom** and **Hand** tools which are locate in the upper left of the screen,

Select **Advanced Blending** to help blend colors and exposure. The **Preview** button will show you what this does to the image.

When you are ready, click on **OK**. The panoramic image soon will appear on your screen.

You can see that my camera was not quite level because the top and bottom borders are not even. **Crop** the panorama to remove the jagged edges.

Use the **Clone Stamp** tool to remove sudden changes in the tones in the sky as you move across the picture..

You also can experiment with the **Perspective** setting and **Cylindrical Mapping** if you like.

### Merging Scanned Images

If you are scanning in a large image, such as a picture from a large format book, the image may too large for the scanner. One solution to this problem is to scan in portions of the image and then photomerge the separate portions. An example is the picture of the stone wall shown below, which was too large for one scan. It was necessary for me to first scan the left portion and then the right portion of the image. The files are called **Wall_Left.jpg** and **Wall_Right.jpg**. (I actually scanned them in as large uncompressed TIF files, but have reduced the pictures in size and saved them as JPGs to give smaller files for the lesson.)
This picture was spread over two pages of a large format book. The black and white lines running through both image are due to the separation between the pages.

Open both pictures, Wall_Left.jpg and Wall_Right.jpg.

Rotate the images and photo merge them as described above.

Crop the merged file and save it as Wall_1.psd. Use the Healing Brush and Clone Stamp tools to remove the lines from the merged image. Save it again.