

Creating Photo Panoramas with Photoshop

Ron Carran December 2, 2005

When producing panoramic pictures without the aid of a true panoramic camera, you can stitch together normal photos taken in a way that makes them fit together easily as a panorama. Here are some techniques to help ensure that your pictures work together well.

Camera setup

- The most important aspect of taking the individual source pictures is to have the camera as level as possible. Although it is possible to use hand-held pictures, a tripod will greatly increase the chances of a successful join of the pictures.
- Level the tripod. You can use a leveling base like the Manfrotto 438 that fits on the top plate of your tripod. This makes it easy to get the base level without having to change the leg lengths. The base has a bubble level built into it. Gitzo also makes a tripod with a leveling center column (Gitzo 1321).
- Find the nodal point of the lens you are using. The nodal point is defined as the optical center of the lens, somewhere in front of the film/sensor plane and behind the front element. You can go on to the reallyrightstuff.com web site to get a full explanation of this technique, and download a chart of the nodal points for many popular lenses. When you know the nodal point, you need to place that point over the center of rotation of the tripod. Use Really Right Stuff's Pan MPR-CL II Nodal Slide (or other similar device) to do this. This eliminates parallax as you turn the camera and keeps the perspective of the shots as similar as possible.
- Level the camera itself (using a hot shoe mounted bubble level).
- Take a few shots, pivoting the camera (on its nodal point) and overlapping by about 20-30%.

Exposure

- It is important to make all of your shots look as close as possible to each other regarding exposure and tonality, or you will have a much harder time blending them together. Here are some basic techniques to follow.
- Set your **ISO** to one value for all the shots, and don't change it (on digital cameras, don't use Auto ISO).
- Set your **Color Balance** (on digital cameras) to a particular setting (like direct sunlight, cloudy, etc. and not to Auto).
- Set your f/stop and speed manually and don't change them.
- Focus manually once, and don't change it once you begin.
- Do not use any polarizing filters, as the filtering effect will change as you rotate the camera. Other filters are ok.

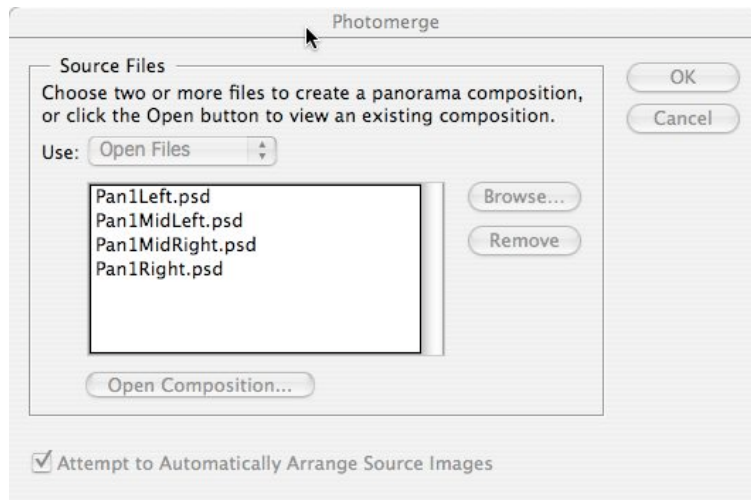
Assembling in Photoshop

- Once you have 3 or 4 (or more) pictures ready to assemble, you can use two different methods in Photoshop to accomplish the job. If you are lucky to have taken your pictures exactly level, then **Photomerge** can usually automate almost all of the steps for you. If, on the other hand, your camera was skewed a little from exact level, you will find some places that don't exactly fit together as they should. Then you can use Photoshop's more manual tools. There are also many third-party packages that can be used for the stitching process. They are listed in the references.

Photomerge

Select the pictures that you want to use in the panoramic.

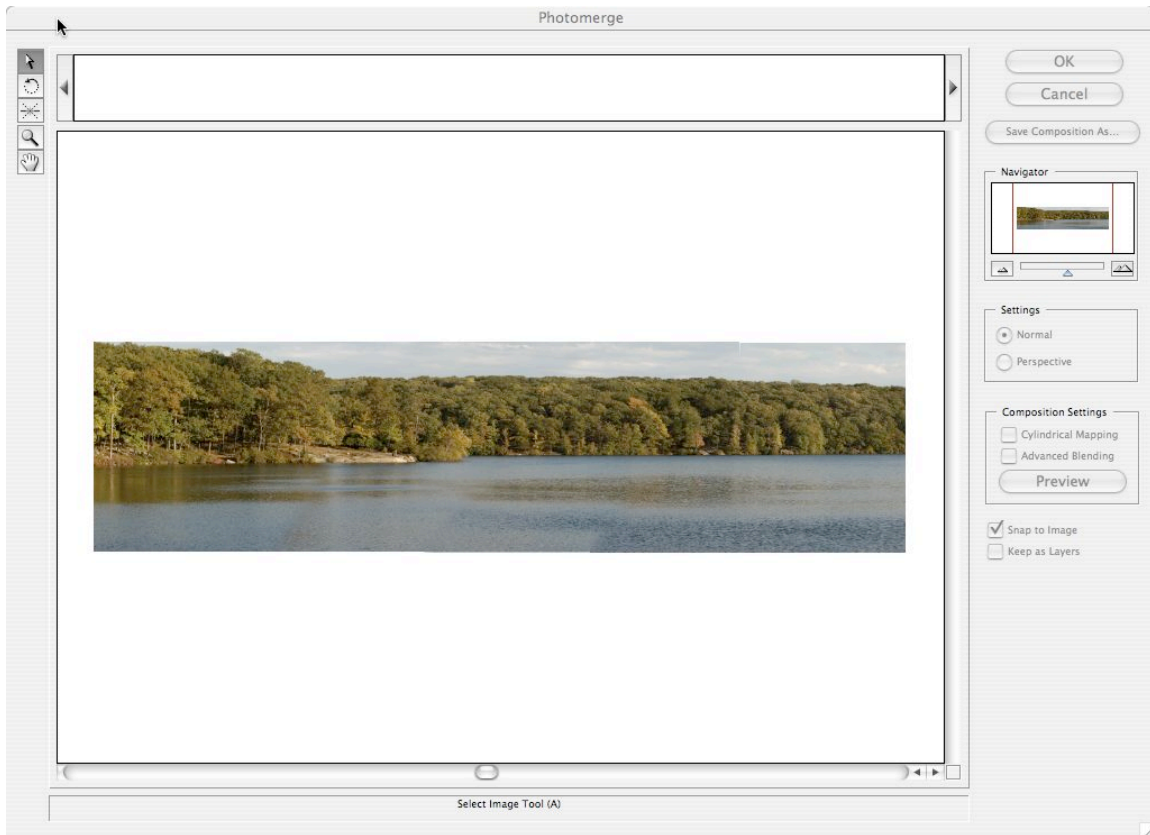
- Go to the File>Automate>Photomerge menu.



Setting up the merge

- You will see a dialog box confirming which pictures you want to use. If you had not selected the images prior to going to this menu, you could browse for them now.
- Check the Attempt to **Automatically Arrange Source Images** box.
- Click **OK** to start the merge.

Figure showing the work screen for the merge done with the 4 images on the next page.



- Keep **Snap to Image** checked.
- If there are problems with the seams, you can try checking **Advanced Blending**.
- When you are happy with the merge, click the **OK** button. This will leave you with a merged panoramic in Photoshop that you can correct as you like.
- Optionally, you can check the **Keep as Layers** box so that the merged result will remain in separate layers. That way, you can manually work with the layers later.

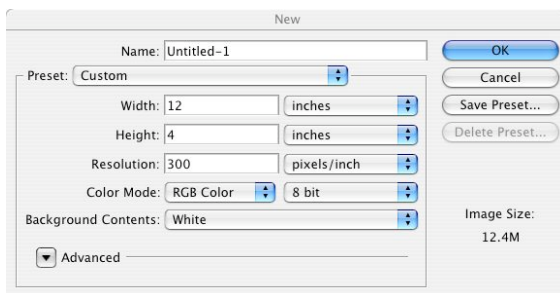
Manually Stitching Photos

Often, you will not be able to get a perfect merge from Photomerge, due to perspective problems with the original photos. In those cases, you can manually alter the different components of the merge to get them to match better.

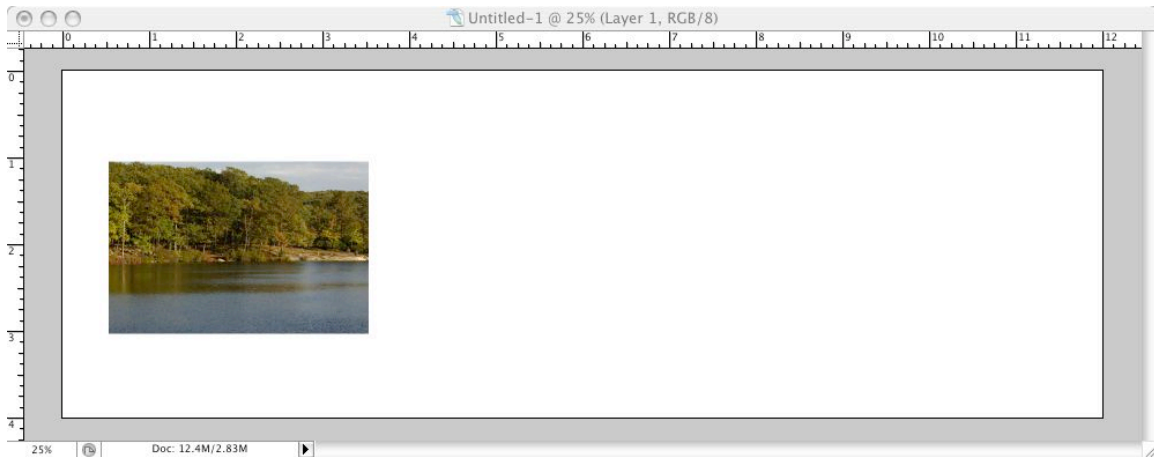
You can either start the merge using Photomerge and checking **Keep as Layers**, or you can build the merge yourself. To build the merge, start by creating a new document large enough to hold all of the component images. Make sure that the resolution of the new document is set to the same as the components (e.g. 300 dpi). Also, make sure that the Color Mode is set the same (e.g. RGB, 8-bit). Assume you are working with 4-300 dpi files.



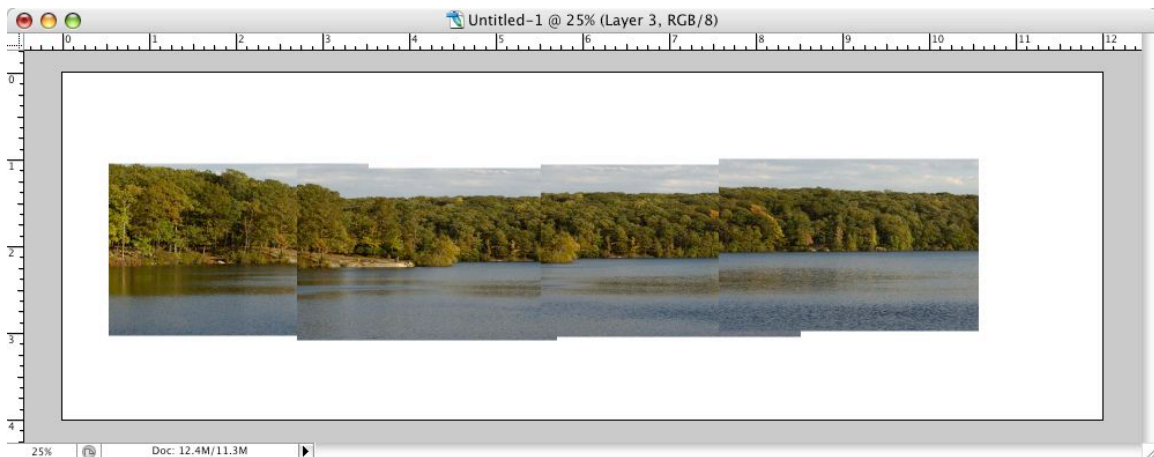
- Create a new document at 300 dpi large enough to contain these 4 pictures and high enough to give about 1" on the top and bottom of the pictures.



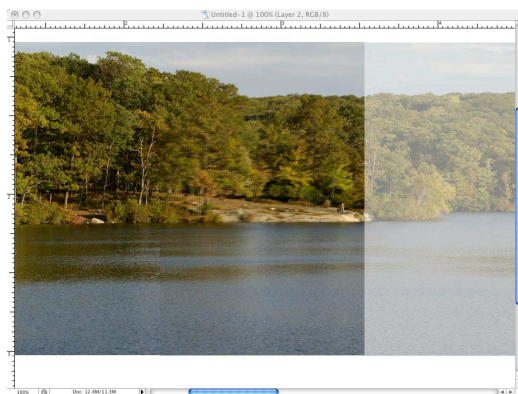
- Move the first picture into the new document using the **Move** tool



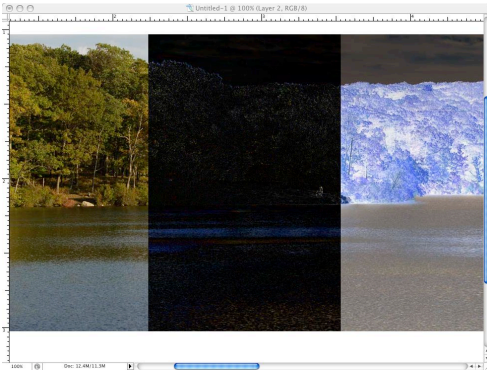
- Move other picture into the new document (each one forms a new layer).



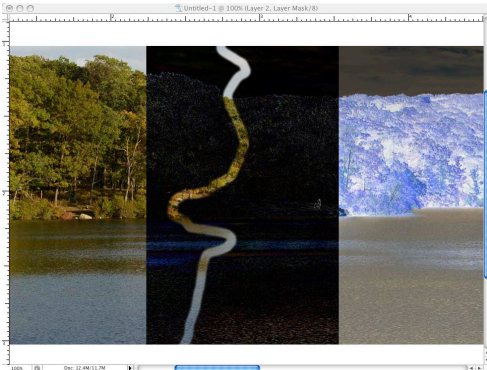
- Turn off layers 3 and 4.
- Set the opacity of layer 2 to 50%.
- Position it over layer 1 until you find a matching area.



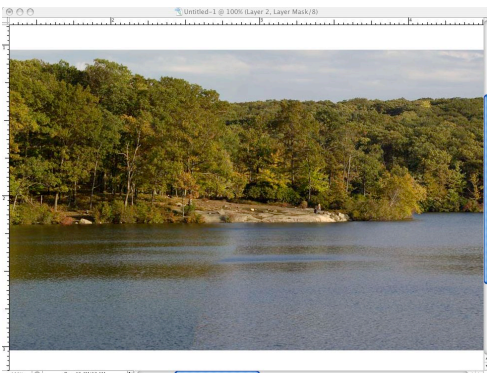
- Change the opacity to 100% and the Blending Mode to **Difference**.
- Position layer 2 until you get the most black showing in some area.



- Add a layer mask to layer 2.
- Using a small, medium-soft brush, draw a black line on the mask through the blackest portions of the overlap.

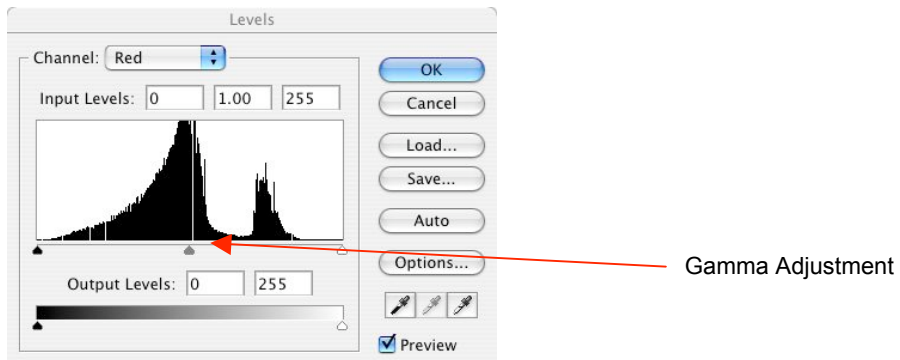


- Now paint the area of the mask to the left of your line with black.
- Set the blending mode of layer 2 back to Normal, and your seam should be relatively good (some touch-up will probably be needed).



If the images refuse to match well enough, you can try to carefully distort each successive layer using Edit>Free Transform.

- Adjust each channel's gamma adjustment to make the two adjacent layers match more closely.



- Continue with the other two layers in the same manner.
- Do a little Cloning and Healing Brush to match elements of each layer.



Finished panoramic.

References

Other panoramic software

Sticher

Panotools plug-in

PanaVue ImageAssembler