Combining images

Introduction

Images can be combined in many ways including multiple versions of the same shot or the same scene, collages, and fantasy images. All these techniques use layers.

I will cover cloning, panoramas, high contrast scenes, collages, and pictures made by seamlessly combining parts of two or more images, such as fantasy pictures.

Example images are in the folder June JPEG SIG.

Cloning

Cloning is the process of copying part of an image and pasting it elsewhere in the same image. It is usually used to disguise a distraction or flaw in the image.

Open the jpeg files "Cloning original" and Cloning final" in Photoshop Elements (I'm using version 5 but cloning is similar in other versions). The final image was accepted in the recent Club landscape competition. Cloning was used in two places to create the final image. The sky was replaced with forest and the picnickers were replaced with grasses. Let's start with the sky.

In Photoshop Elements:

- Select the "Cloning original" file, which will appear on the Background layer.
- Create a new empty layer, named "clone out sky", on top of the background (on the menu bar choose Layer – New … and in the dialog box change the name from Layer 1 to "clone out sky" then click OK)
- Choose the cloning tool
- At the top left of the screen, check that you are using the "clone stamp tool" not the "pattern stamp tool", using the little icons there.
- Moving across, use the brush control to select a fuzzy brush, 100 pixels in size.
- Leave Mode at Normal and Opacity at 100%.
- Check that "Aligned" and "Sample all layers" have tick marks.
- Move the mouse cursor over the area to be cloned (in this case, just in from the top right-hand corner of the image).
- Hold down the Alt key (on the keyboard) and click the left mouse button. Release the button and the Alt key. This selects the area under the mouse pointer as the area to be cloned.

- Move the mouse pointer to the top left part of the sky. Hold down the left mouse button and drag the mouse across the whole of the sky area.

Cloning done!

Now use the same techniques to remove the picnickers and their vehicles.

"Cloning" from another image

Sometimes, there is nothing in the original image that fits the part you want to remove. For example, I took a group photograph at the Blenheim Golf Club's 75th jubilee. In the first shot, the guest of honour (Richard Best) was talking to his neighbour. I had another shot which was generally inferior but did have Richard smiling at the camera. I cloned Richard out of the second shot into the first shot as follows:

- Open the jpeg files, Replacement-1 and Replacement-2, in Photoshop Elements. Zoom them both in to 100%.
- On the Replacement-1 image, scroll to find Richard Best smiling at the camera.
- On the tool bar select the Elliptical Marquee tool. (It may be hiding under the Rectangular Marquee tool.)
- Draw a fairly large circle around Richard Best's face. Use Ctrl-C to copy the face to the clipboard.
- Switch to the Replacement-2 image. Make a new layer.
- Use Ctrl-V to paste the copy of Richard Best into the new layer.
- Select the Move tool and move Richard's face so that it fits on top of the main image below.

If it is not quite right, go back to the Repacement-1 image and use the History to start again at the point where you selected the Elliptical Marquee tool.

For the real thing, I actually did this in Photoshop CS3 using Auto Align Layers and a Layer Mask, which is easier and quicker. The results were about the same, though.

Panoramas

A panorama is a way of making an image that is much longer in one direction than another. You can do this by cropping but that only works if you can get the whole image in one shot. Also, cropping reduces the detail available while combining shots to make the panorama increases the detail available.

Start by shooting several images of the scene. In general, it is good to use a tripod but not essential. Each image should overlap the previous one by about one third. You need plenty of space above and below the main part of the image so it is often a good idea to use the camera in portrait mode even when shooting a horizontal panorama.

When working with JPEG images, you should shoot all the individual parts with fixed aperture, exposure, focus, and white balance. This probably means taking a regular shot of the best part of the scene and then, if it looks good, transferring those settings to the manual settings on your camera for taking the whole panorama. If you are using this method for a large group photograph, I recommend taking a set going from left to right and immediately taking another set going from right to left (or vice versa). This doubles your chances of catching people looking at the camera with their eyes open.

Photoshop CS3 is much better at doing panoramas than Photoshop Elements 5. I don't know what Photoshop Elements 6 has. In Photoshop CS3, you load the images

just as in Photoshop Elements, and then you use a script to load the separate images as a stack of layers. Then, auto-align the layers and auto-merge them. The result is bunch of layers and layer masks that you can tinker with if necessary.

For Photoshop Elements 5, delete any images already there; then load the images Panorama-4 through Panorama-1. Then …

- Choose File – New – PhotoMerge Panorama... from the menu bar.
- In the dialog box, simply click OK. Photoshop Elements will churn for a while.
- Eventually, Photoshop Elements will present you with a draft panorama. You can move images around if Elements didn't line them up correctly but in this case it should get them right.
- Click on "Advanced merge" over on the right hand side and click OK.
- After more churning, you get the result.
- Crop it using the crop tool.

My result is in Panorama.jpg and the result (unedited) from Photoshop CS3 is in Panorama-CS3.jpg. In this case, the differences are small but I've found in other cases that Photoshop CS3 can handle series of images that don't work in Photoshop Elements 5. The ability to edit the result, in Photoshop CS3, is also invaluable in some cases.

At least with Photoshop CS3, you can combine images taken moving the camera up and down rather than from side to side. You can even do "panoramas" with several rows of images giving increased resolution both vertically and horizontally.

High Contrast Scenes

A common example of high contrast is a bright sky and relatively dark foreground. This can be tackled in-camera by using a graduated filter. Photoshop allows us to achieve a similar effect by combining two or more images.

The best way is to take two or more shots of the same high-contrast image but at different exposures. Generally, use a tripod and manual focus, white balance, aperture and exposure time. Only vary the exposure time between shots.

(Alternatively, if you are using RAW images, you can create two or more images with different exposures from one RAW shot, although this is generally of lower quality than taking multiple shots.)

Open the three "HDR" jpeg images in Photoshop Elements. Tile them (Window – Images – Tile).

Locate HDR-1. Select the Move tool (top of the tool bar). Use it to move HDR-2.jpg over HDR-1.jpg and then HDR-3.jpg over the other two.

Now remove HDR-2.jpg and HDR-3.jpg from Photoshop Elements. The remaining image should have three layers, Background, Layer 1 and Layer 2 each with one of the HDR shots on it. Save this layered image as HDR.tif using File – Save As.

Change the Background layer to a normal layer by right-clicking and choosing Layer from Background.

Change the layer names from layer 0 etc to HDR-1 (EV +1), HDR-2 (EV -.5), and HDR-3 (EV -2).

Align the layers manually using the Move tool. You may need to nudge them using the arrow keys with the Ctrl key held down. Get them exactly aligned. If necessary, you can temporarily adjust the opacity to help.

The next steps will delete the unwanted parts of the top two layers. This is a destructive process but we have saved the originals so we're OK.

- Use the Rectangular marquee tool to select the bottom two thirds or so or so of the top layer as follows:
- Click on the top layer.
- Click on the Marquee tool and check in the top options bar that you have the rectangular one selected.
- Click at the bottom left-hand corner of the image and drag up to the right-hand side about two thirds of the way up.)
- From the menu bar, choose Select – Feather and set it to 200 pixels. This makes a very fuzzy border to the selected area.
- From the menu bar, choose Edit – Delete, which deletes the selected area.
- The middle layer should now show through where you have deleted part of the upper layer.
- Now, click on the middle layer to select it. Repeat the select, feather, delete process on the middle layer, selecting the bottom third or so.

Now, the top third or so of the image will come from the top layer, the middle third from the middle image, and the bottom third from the bottom image. Thus, we have the sky under-exposed and the foreground slightly over-exposed just like using a graduated filter.

In effect we have merged the three layers to get the best of each. The result is an image which is more uniformly exposed. You may need to go back and adjust the sizes of the deletions, especially the top layer in this case, to get the best effect.

If you do this in Photoshop CS3, use layer masks instead of deleting anything.

In this case, you can use a gradient in a layer mask as an alternative to a feathered rectangular selection. You can also make an HDR (high dynamic range) image but that is beyond the scope of this tutorial.

Collages

A photographic collage is a collection of images combined together to make one complex image. Generally speaking, the images overlap but retain their separate identity. A layout of images on a page is a simplified form of a collage and I'll start with that.

For a page layout in Photoshop Elements, load all the images you will use into Photoshop Elements.

Decide what size paper you will use and make a new file with the appropriate dimensions as follows:

- From the menu bar, choose File – New – Blank File....
- In the New dialog box, change the name to "Layout"
- Choose a preset paper size, in this case A4
- Resolution should be your printer's optimum resolution, e.g. 300 dpi
- Leave the other boxes at their default values and click OK.
- Tile the images by choosing the tile icon (4 small squares) at the top right of the Photoshop Elements window.
- Click on the main image you will use for the layout and resize it as follows.
- From the menu bar, choose Image – Resize.
- In the dialog box change the resolution to match that you used for the Layout file (e.g. 300 dpi).
- Now adjust the Document Size to the approximate size you want on your layout.

- Keep the three boxes at the bottom left of the dialog box ticked.
- Click OK.
- Select the Move tool and use it to drag the adjusted image to its approximate position in the "Layout" file.

Repeat the above re-size and move steps for each of the images.

Fine-tune the layout by using the Move tool to move the images around on the "Layout" page. Use the Ctrl key with the Move tool for small changes. Drag one corner of an image to change its size. You can overlap images if you like. Drag the layers in the layers palette to put one on top of another.

Save the final Layout with layers in case you want to make changes later. For printing and other uses, flatten the image (Layer – Flatten Image) and save it as a jpeg.

Making a complex collage of overlapping images starts the same way: get all your individual images the right size and drag them to the final canvas. Start with one image in the right place and drag an adjacent image over it. Use the eraser tool to erase parts of the upper image to get the overlap you want. Use a hard edge brush for a sharp line between the two images or a soft edge brush for a fuzzy overlap. Keep going with all the images you want to use. The problem with this approach is that the eraser tool makes a permanent change to the image so it is difficult to go back and make changes without starting over with that particular layer by loading the original image back in. Photoshop CS3 solves this problem by using layer masks.

Fantasy images

I will go through this one right from the original photographs, to illustrate a normal work flow. I will combine two images, a crocodile and a kookaburra.

Step 1. Prepare the crocodile

Load the file Fantasy-1.jpg into Photoshop Elements.

There are several things to fix in this image before we proceed, especially the dark area at the top left and some distracting bright white spots in the foreground. I will also turn the crocodile round so the picture flows from left to right and the lighting is more like that on the kookaburra.

The crocodile is now on the background layer. We don't want to change this so ***duplicate*** the background layer by right-clicking on it. Name the new layer "crocodile". Click on it in the layers palette so it is the layer we will work on next. The background layer will no longer be part of our image, so unclick the eye icon to make the background invisible.

Let's turn the crocodile round first. From the menu bar choose Image – Rotate – Flip Layer Horizontally. The crocodile now faces left to right.

For cropping, select the crop tool . Click and drag it over the bottom part of the image leaving about half the dark brown at the top left, for now. We need this space at the top for the kookaburra which will sit on the crocodile's nose. We could probably crop a little off the right-hand end, too, without cramping the crocodile too much.

Now, we will remove some distractions with the clone tool. We will do the cloning on a separate layer as follows.

- Make sure the "crocodile" layer (not the background) is selected in the layers palette. Create a new layer by choosing Layer – New from the menu bar. I named this layer "tidy up croc".

- Use the clone stamp tool as described above to cover the brown area at the top left with sand from elsewhere in the image. There are also some small white areas in the sand around the image. Remove these by cloning, too.

The crocodile is nearly done; it's just a bit too dark. Fix this as follows:

- From the menu bar, choose Layer – New Adjustment Layer – Levels. This makes a new Levels adjustment layer above the "tidy up croc" layer.
- In the New Layer dialog box, change the layer name to "Lighten croc".
- Also in this dialog box, change the mode from normal to luminosity.
- Click OK to get the Levels dialog box.
- In the Levels dialogue box change the centre input level from 1.00 to 1.20. This lightens the croc up without removing any colour because we are only changing the luminosity.
- Click OK.

You can see the effect of the blending mode by changing it in the small selection box to the left of the opacity control. It's quite subtle but the colours are slightly more saturated with the mode set to luminosity.

The crocodile image is now ready to go. Save your work as "Fantasy.tif".

Step 2. Prepare the kookaburra.

Load the file "Fantasy-2.jpg" into Photoshop Elements.

We're just going to use the kookaburra from this image, so start by cropping the image to leave only the upper part of the kookaburra (above the branch) and a lit-tle bit of the branch and the other surroundings.

There's no cleaning up to be done but we can make the image look a little better with a Levels adjustment layer and its layer mask as follows:

- Create the new adjustment layer by choosing, from the menu bar, Layer – New Adjustment Layer – Levels …
- In the New Layer dialog box name this layer "Kookaburra levels" and set the Mode to Luminosity.
- Click OK to get the levels dialogue box. Change the centre input level from 1.00 to 0.90. This darkens the image to better bring out the detail in the feathers.
- Unfortunately, this setting also darkens the eye which we do not want to do. So, click on the layer mask for the "Kookaburra Levels" layer.
- Set the foreground colour to black with the icon at the bottom of the tool bar.
- Select the brush tool and choose a fuzzy brush of about 20 px size.
- Position the brush over the eye (it should be the same size as the eye) and click to paint black over the eye.
- A black dot will appear in the layer mask and will prevent the Levels adjustment applying to the eye.

Turn the visibility of the "Kookaburra Levels" layer off and on to see what we have done. It is subtle but to my eye does improve the image.

The Kookaburra is now finished and we are ready to cut it out of its background before pasting onto the crocodile. Save the image, with layers, as Kookaburra.tif.

Step 3. Select the kookaburra

First, flatten the Kookaburra image by choosing Layer – Flatten Image from the menu bar.

Next, the kookaburra is not as sharp as the crocodile, so sharpen the kookaburra as follows:

- From the menu bar choose Enhance – Unsharp Mask
- Set the Amount to 400, the radius to 0.5 and the threshold to 2.
- This sharpens the kookaburra quite dramatically and is a better match to the crocodile.

There are several methods of selecting part of an image and often more than one is needed to get a good selection. For this example, I will use the magic wand. Photoshop Elements 6 and Photoshop CS3 have a new tool that combines the effects of the magic wand and the magnetic lasso and would probably work better. It is used in exactly the same way as the magic wand tool but it snaps to edges, which the magic wand tool doesn't do unless the contrast is very high.

Use the magic wand to select the kookaburra as follows:

- Select the magic wand tool from the toolbar.
- The options bar for the magic wand starts with a group of 4 icons. The one on the left starts a new selection, the next one adds to a selection, the third one subtracts from a selection and the last one gives the intersection of two selections. We will use the add and subtract options once the selection is started. To get started, though, click on the first icon.

- Next on the options bar is a very important setting, the Tolerance. Start with it set at 50.
- The following three check boxes should each have a green tick.
- The magic wand selects all those pixels that have the same or similar colour to the pixel selected with the magic wand. So, move the magic wand over to the centre of the kookaburra's chest, in the white area, and click with the left mouse button. A selection will appear of all the adjacent (contiguous) pixels that are the same colour or within "50" of the same colour as was clicked. This is our starting selection.
- Save this initial selection by choosing Select – Save Selection from the menu bar. Name the selection "Kookaburra".
- Now change the mode to "add" by choosing the second mode icon on the options bar.
- Click around on the kookaburra to add to the selection. If you click somewhere and it selects a large part of the surroundings, use Ctrl-Z or the history palette to reverse the last click.
- Periodically, save the selection again. You can re-save by choosing the same name.
- You will find that you can't get a very precise selection. To fine-tune your initial selection, reduce the Tolerance setting to about 20 and then continue clicking to add more to your selection.
- There will be some areas that you need to remove from the selection. Choose the subtract mode from the options bar and click on the areas to be subtracted.
- To further refine the selection, reduce the Tolerance to 10 and continue. You might even want to go to a Tolerance of 5 for a final touch up.

- Re-save the selection.

When you have the best selection you can get, we need to feather the edge as follows:

- From the menu bar choose Select – Feather.
- In the dialog box set the feather to 2 pixels and click OK.
- Re-save the selection.

Finally, copy the selection to the clipboard by choosing Edit – Copy from the menu bar.

Step 4. Combine the images.

Open the crocodile image, Fantasy.tif, in Photoshop Elements (it should be already there – look under Window on the menu bar).

- Click on the top layer to select it.
- Choose Edit – Paste from the menu bar.
- The Kookaburra will appear on the image in a new layer.
- Use the Move tool to position it.

That's it!

Notice that the lighting on the kookaburra approximately matches the lighting on the crocodile. This is, of course, essential. The lighting on the kookaburra is maybe not as warm as on the crocodile. We could try to adjust this with an adjustment layer below the kookaburra layer to make the crocodile "cooler".

A Photoshopper's work is never done!

Harry R. Matthews, 27 May 2008