

# 5 QUICK FIXES

## Lesson overview

In this lesson, you'll learn how to do the following:

- Remove red eye.
- Brighten an image.
- Adjust the features of a face.
- Combine images to create a panorama.
- Crop and straighten an image and fill in any resulting empty areas.
- Blur the background of an image using Iris Blur.
- Merge two images to extend depth of field.
- Apply optical lens correction to a distorted image.
- Move an object seamlessly.
- Adjust the perspective of an image to match another image.



This lesson will take about an hour to complete. Please log in to your account on [peachpit.com](http://peachpit.com) to download the lesson files for this chapter, or go to the Getting Started section at the beginning of this book and follow the instructions under “Accessing the Lesson Files and Web Edition.”

As you work on this lesson, you'll preserve the start files. If you need to restore the start files, download them from your Account page.



*OBJECT: CORRECTING  
AGE DISTORTION*



Sometimes just one or two clicks in Photoshop can turn an image from so-so (or worse) to awesome. Quick fixes get you the results you want without a lot of fuss.

# Getting started

Not every image requires a complicated makeover using advanced features in Photoshop. In fact, once you're familiar with Photoshop, you can often improve an image quickly. The trick is to know what's possible and how to find what you need.

In this lesson, you'll make quick fixes to several images using a variety of tools and techniques. You can use these techniques individually, or team them up when you're working with an image that needs just a little more help.

- 1 Start Photoshop, and then immediately hold down Ctrl+Alt+Shift (Windows) or Command+Option+Shift (Mac) to restore the default preferences. (See “Restoring Default Preferences” on page 5.)
- 2 When prompted, click Yes to delete the Adobe Photoshop Settings file.

## Improving a snapshot

If you're sharing a snapshot with family and friends, you may not need it to look professional. But you probably don't want glowing eyes, and it would be good if the picture isn't too dark to show important detail. Photoshop gives you the tools to make quick changes to a snapshot.

## Correcting red eye

*Red eye* occurs when the retina of a subject's eye is reflected by the camera flash. It commonly occurs in photographs taken in a dark room, because the subject's irises are wide open. Fortunately, red eye is easy to fix in Photoshop. In this exercise, you will remove the red eye from the woman's eyes in the portrait.

You'll start by viewing the before and after images in Adobe Bridge.

- 1 Choose File > Browse In Bridge to open Adobe Bridge.
- 2 In the Favorites panel in Bridge, click the Lessons folder. Then, in the Content panel, double-click the Lesson05 folder to open it.
- 3 Adjust the thumbnail slider, if necessary, so that you can see the thumbnail previews clearly. Then look at the RedEye\_Start.jpg and RedEye\_End.psd files.

● **Note:** If you haven't installed Bridge, you'll be prompted to do so when you choose Browse In Bridge. For more information, see page 3.

● **Note:** If Bridge asks you if you want to import preferences from a previous version of Bridge, click No.



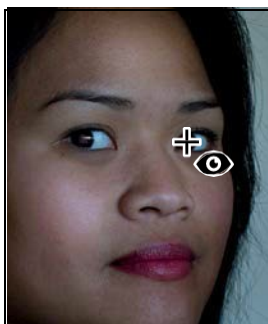
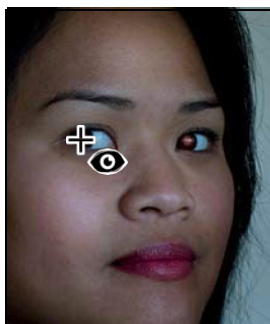
RedEye\_Start.jpg



RedEye\_End.psd

Not only does red eye make an ordinary person or animal appear sinister, but it can distract from the subject of the image. It's easy to correct red eye in Photoshop, and you'll quickly lighten this image too.

- 4 Double-click the RedEye\_Start.jpg file to open it in Photoshop.
- 5 Choose File > Save As, choose Photoshop for the Format, name the file **RedEye\_Working.psd**, and click Save.
- 6 Select the Zoom tool (Q), and then drag to zoom in to see the woman's eyes. If Scrubby Zoom isn't selected, drag a marquee around the eyes to zoom in.
- 7 Select the Red Eye tool (⌘), hidden under the Spot Healing Brush tool (J).
- 8 In the options bar, reduce the Pupil Size to **23%** and the Darken Amount to **62%**.  
The Darken Amount specifies how dark the pupil should be.
- 9 Click the pupil in the woman's left eye. The red reflection disappears.
- 10 Click the pupil in the woman's right eye to remove the red reflection there, too.



If the red reflection is directly over the pupil, clicking the pupil removes it. However, if the red reflection is slightly off the pupil, try clicking the highlight in the eye first. You may need to try a few different spots, but it's easy to undo and try again.

- 11 Choose View > Fit On Screen to see the entire image.

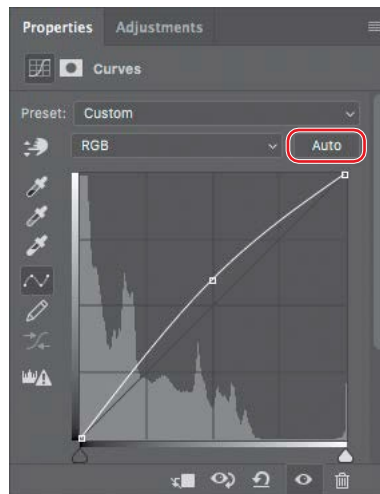
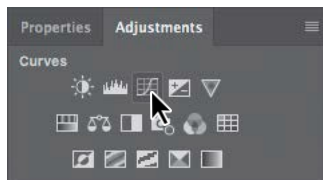


- 12 Choose File > Save.

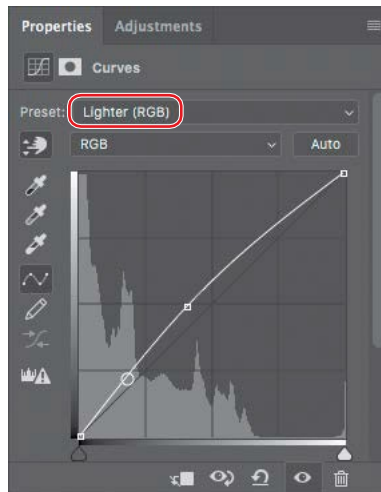
## Brightening an image

The woman's eyes no longer glow red, but the overall image is a bit dark. You can brighten an image in several different ways, as you've already seen. You can try adding adjustment layers for Brightness/Contrast, Levels, and Curves, depending on the degree of adjustment you want to make. For a quick fix or a good starting point, try the Auto button or the presets, which are available in both the Levels and Curves adjustments. Let's try a Curves adjustment layer for this image.

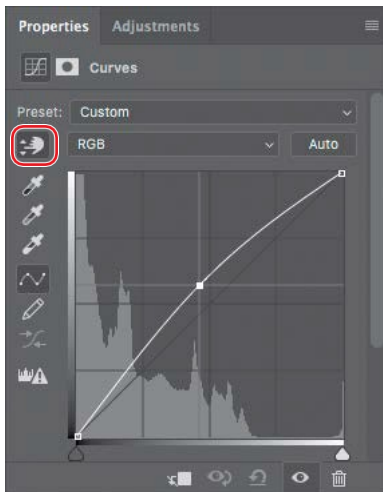
- 1 Click Curves in the Adjustments panel.
- 2 Click Auto to apply an automatic correction. The image brightens.



- 3 Choose Lighter from the Preset menu. The curve changes slightly. The difference between the two curves is that a preset applies the same curve to every image, while Auto customizes the curve after analyzing an individual image.



- 4 Click the reset button (↺) at the bottom of the Properties panel to revert back to the unadjusted image.
- 5 Select the on-image adjustment tool (⚡) in the Curves panel, and then click the center of the forehead and drag upwards. That brightens the image nicely, and also improves the contrast.



- 6 Choose Layer > Flatten Image.
- 7 Save the file.

**Tip:** If you want to use the Auto button, or the white point or black point samplers (eyedropper icons) in the Curves or Levels adjustments, use them before applying manual adjustments. Like presets, adjustments by those tools replace manual adjustments.

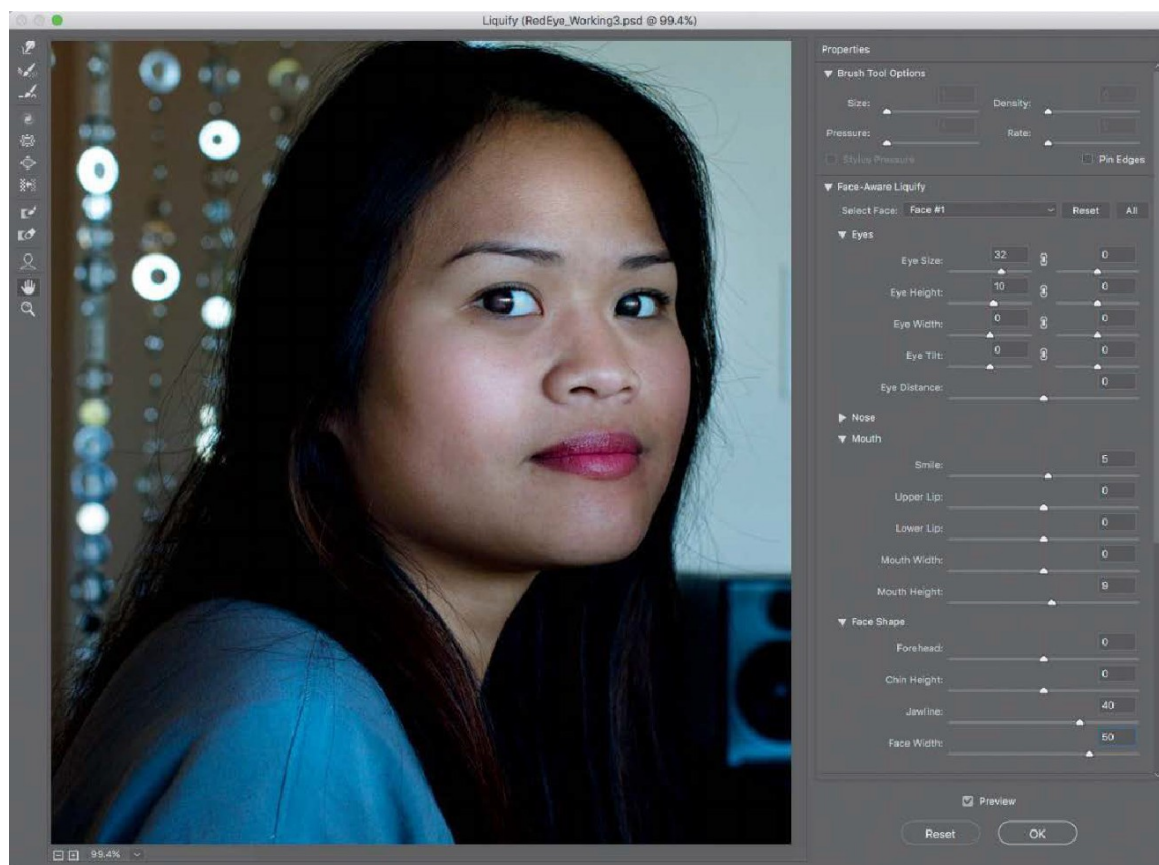
**Tip:** To see how much you've brightened the image, hide the Curves layer, and then show it again.




## Adjusting facial features with Liquify

The Liquify filter is useful when you want to distort only part of an image. It includes Face-Aware Liquify options that can automatically recognize faces in images, and then lets you easily adjust facial features such as the eyes, nose, and mouth. For example, you can adjust the size of or distance between the eyes. Being able to adjust facial features can be useful for photos used in advertising and fashion, when portraying a certain look or expression may be more important than faithfully representing a specific person.

- 1 With RedEye\_Working.psd still open, choose Filter > Liquify.
- 2 In the Properties panel, expand the Face-Aware Liquify options.



➤ **Tip:** When the Face tool  is selected in the Liquify toolbar, handles appear as you hover the pointer over different parts of the face. You can drag those handles to adjust different parts of the face directly, as an alternative to dragging the Face-Aware Liquify sliders.

- 3 Make sure the Eyes section is expanded and that the link icon is selected for both Eye Size and Eye Height; then enter **32** for Size and **10** for Height.

When the link icon is not selected for an Eyes option, you can set different values for the left and right eyes.

- 4 Make sure the Mouth section is expanded, and then enter **5** for Smile and **9** for Mouth Height.
- 5 Make sure the Face Shape section is expanded, and then enter **40** for Jawline and **50** for Face Width.
- 6 Deselect and reselect the Preview option to compare the image before and after your changes.



*Before Face-Aware Liquify*



*After Face-Aware Liquify*

Feel free to experiment with any of the Face-Aware Liquify options to get a better sense of the possibilities for quick, easy alterations.

- 7 Click OK to exit Liquify. Close the document and save your changes.

The Face-Aware Liquify features are available only when Photoshop recognizes a face in an image. It may not recognize a face that is turned too far away from the camera or when a face is partially covered by hair, sunglasses, or a hat shadow.

**Tip:** The Face-Aware Liquify options have a limited range because they're designed for subtle, believable distortions. If you want to exaggerate faces into caricatures or extreme expressions, you may want to use the more advanced manual tools along the left side of the Liquify dialog box.



# Blurring a background

The interactive blurs in the Blur Gallery let you customize a blur as you preview it on your image. You'll use an iris blur to blur the background in an image, focusing the viewer's attention on the main attraction—in this case, the egret. You'll apply the blur as a Smart Filter so that you can modify it later if you want to.

You'll start by looking at the start and end files in Bridge.

- 1 Choose File > Browse In Bridge to open Adobe Bridge.
- 2 In the Favorites panel in Bridge, click the Lessons folder. Then, in the Content panel, double-click the Lesson05 folder to open it.
- 3 Compare the Egret\_Start.jpg and Egret\_End.psd thumbnail previews.



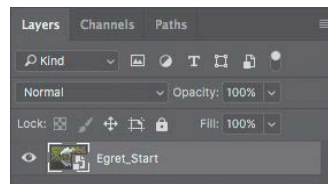
*Egret\_Start.jpg*



*Egret\_End.psd*

In the final image, the egret appears sharper, as its reflection and the grass around it have been blurred. Iris Blur, one of the interactive blurs in the Blur Gallery, makes the task an easy one—no masking required.

- 4 Return to Photoshop, and choose File > Open As Smart Object.
- 5 Select the Egret\_Start.jpg file in the Lesson05 folder, and click OK or Open.



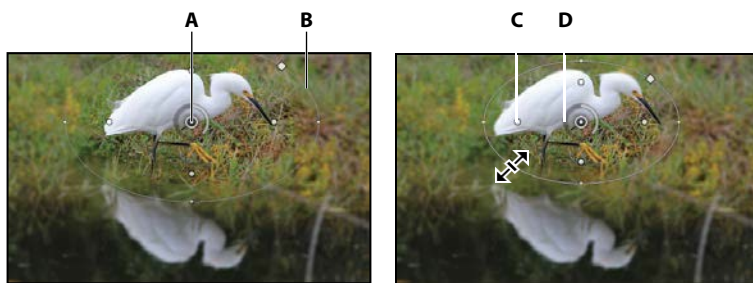
Photoshop opens the image. There is one layer in the Layers panel, and it's a Smart Object, as indicated by the badge on the layer thumbnail icon.

- 6 Choose File > Save As, choose Photoshop for the Format, name the file **Egret\_Working.psd**, and click Save. Click OK in the Photoshop Format Options dialog box.

- 7** Choose Filter > Blur Gallery > Iris Blur.

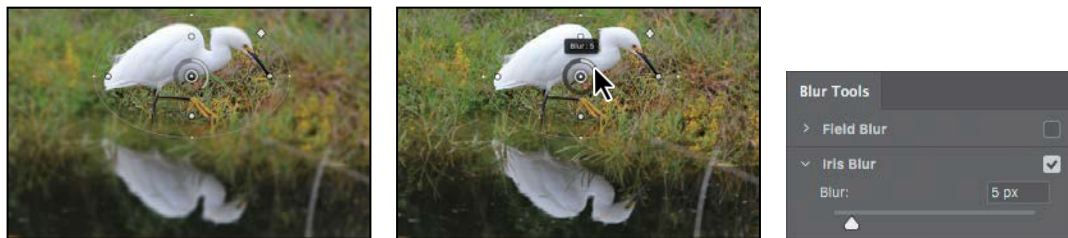
A blur ellipse is centered on your image. You can adjust the location and scope of the blur by moving the center pin, feather handles, and ellipse handles. At the top right corner of the Blur Gallery task space, you also see the expandable Field Blur, Tilt-Shift Blur, Path Blur, and Spin Blur panels.

- 8** Drag the center pin so that it's at the bottom of the bird's body.  
**9** Click the ellipse, and drag inward to tighten the focus around the bird.



**A.** Center **B.** Ellipse **C.** Feather handle **D.** Focus

- 10** Press Alt (Windows) or Option (Mac) as you click and drag the feather handles to match those in the first image below. Pressing Alt or Option lets you drag each handle separately.  
**11** Click and drag on the focus ring to reduce the amount of blur to **5** px, creating a gradual but noticeable blur. You can also change the amount of blur by moving the Blur slider in the Iris Blur area of the Blur Tools panel.



- 12** Click OK in the options bar to apply the blur.

The blur may be a little too subtle. You'll edit the blur to increase it slightly.

- 13** Double-click the Blur Gallery in the Egret layer in the Layers panel to open it again. Adjust the blur to **6** px, and click OK in the options bar to apply it.

The egret is accentuated by blurring the rest of the image. Because you applied the filter to a Smart Object, you can hide or edit the effect without altering the original image.

- 14** Save the file, and then close it.

**Tip:** If you have an iPhone camera that produces an HEIF depth map, such as an iPhone Plus or iPhone X, you can create a more realistic background blur effect by loading the depth map into the Lens Blur filter (Filter > Blur > Lens Blur). This requires a Mac using macOS 10.13 or later.

## Blur Gallery

The Blur Gallery includes five interactive blurs: Field Blur, Iris Blur, Tilt-Shift, Path Blur, and Spin Blur. Each gives you on-image selective motion blur tools, with an initial blur pin. You can create additional blur pins by clicking on the image. You can apply a single blur or a combination of blurs, and you can create a strobe effect for path and spin blurs.

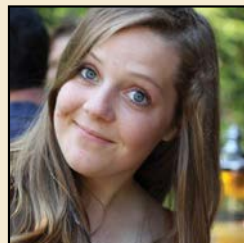


Before

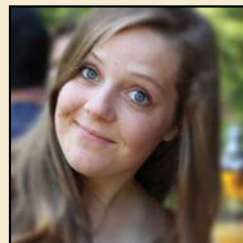


After

**Field Blur** applies a gradient blur to areas of the image, defined by pins you create and settings you specify for each. When you first apply Field Blur, a pin is placed in the center of the image. You can adjust the blur relative to that point by dragging the blur handle or specifying a value in the Blur Tools panel; you can also drag the pin to a different location.



Before



After

**Iris Blur** simulates a shallow depth-of-field effect, gradually blurring everything outside the focus ring. Adjust the ellipse handles, feather handles, and blur amount to customize the iris blur.



Before



After

**Tilt-Shift** simulates an image taken with a tilt-shift lens. This blur defines areas of sharpness and then fades to a blur at the edges. You can use this effect to simulate photos of miniature objects.



Before



After

**Spin Blur** is a radial-style blur measured in degrees. You can change the size and shape of the ellipse, re-center the rotation point by pressing Alt or Option as you click and drag, and adjust the blur angle. You can also specify the blur angle in the Blur Tools panel. Multiple spin blurs can overlap.



Before

After

**Path Blur** creates motion blurs along paths you draw. You control the shape and amount of the blur.

When you first apply a Path Blur, a default path appears. Drag the end point to reposition it. Click the center point and drag to change the curve. Click to add additional curve points. The arrow on the path indicates the blur's direction.

You can also create a multiple-point path or a shape. Blur shapes describe the local motion blurs, similar to camera shake (see "Camera Shake Reduction" on page 138). The Speed slider in the Blur Tools panel determines the speed for all the path blurs. The Centered Blur option ensures that the blur shape for any pixel is centered on that pixel, resulting in more stable-feeling motion blurs; to make the motion appear more fluid, deselect this option.

In the **Effects** tab, you specify the bokeh parameters to control the appearance of blurred areas. Light Bokeh brightens the blurred areas; Bokeh Color adds more vivid colors to lightened areas that aren't blown out to white; Light Range determines the range of tones that the settings affect.



Before

After

You can add a **strobe effect** to spin and path blurs. Select the **Motion Effects** tab to bring its panel forward. The Strobe Strength slider determines how much blur shows between flash exposures (0% gives no strobe effect; 100% gives full strobe effect with little blur between exposures). Strobe Flashes determines the number of exposures.



Before

After

Applying a blur will smooth out visible digital image noise or film grain that's in the original image, and this mismatch between the original and blurred areas can make the blur appear artificial. You can use the **Noise** tab to restore noise or grain so that blurred areas match up with unblurred areas. Start with the Amount slider, and then use the other Noise options to match the character of the original grain. Increase the Color value if the original has visible color noise, and lower the Highlights value if you need to balance the noise level in the highlights compared to the shadows.

## Creating a panorama

Sometimes a vista is just too large for a single shot. Photoshop makes it easy to combine multiple images into a panorama so that your viewers can get the full effect.

Once again, you'll take a look at the end file first, to see where you're going.

- 1 Choose File > Browse In Bridge.
- 2 Navigate to the Lesson05 folder, if you're not there already. Then, look at the Skyline\_End.psd thumbnail preview.



*Skyline\_End.psd*

You'll combine four shots of the Seattle skyline into a single wide panorama image so that viewers get a sense of the whole scene. Creating a panorama from multiple images requires only a few clicks. Photoshop does the rest.

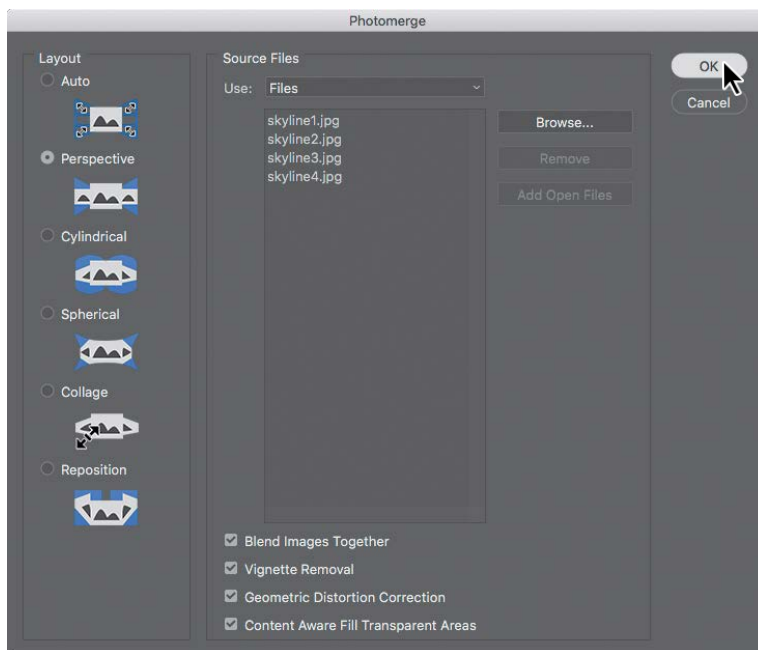
**Tip:** You can also open selected images from Bridge directly into Photomerge by choosing Tools>Photoshop>Photomerge.

- 3 Return to Photoshop.
- 4 With no files open in Photoshop, choose File > Automate > Photomerge.
- 5 In the Source Files area, click Browse, and navigate to the Lesson05/Files For Panorama folder.
- 6 Shift-select all the images in the folder, and click OK or Open.
- 7 In the Layout area of the Photomerge dialog box, select Perspective.

The best option for merging photos isn't always Perspective; it depends on how the originals were photographed. If you're not completely happy with the result of a particular merge, you can always try again with a different Layout option. If you're not sure which one to use, you can simply click Auto.

- 8 At the bottom of the Photomerge dialog box, select Blend Images Together, Vignette Removal, Geometric Distortion Correction, and Content Aware Fill Transparent Areas. Then click OK.





Blend Images Together blends images based on the optimal borders between them, instead of just creating a simple rectangular blend. Vignette Removal performs exposure compensation in images with darkened edges. Geometric Distortion Correction compensates for barrel, pincushion, or fisheye distortion. Content Aware Fill Transparent Areas automatically patches the empty areas between the merged image edges and the sides of the canvas.

Photoshop creates the panorama image. It's a complex process, so you may have to wait a few moments while Photoshop works. When it's finished, you'll see the full vista in the image window with five layers in the Layers panel. The bottom four layers are the original four images you selected. Photoshop identified the overlapping areas of the images and matched them, correcting any angular discrepancies. The top layer, containing "(merged)" in the layer name, is a single panorama image blended from all of the images you selected, combined with formerly empty areas filled in by Content Aware Fill. Those areas are indicated by the selection.



● **Note:** Photomerge will require more time when you merge more images, or images with large pixel dimensions. Photomerge works faster on computers that are newer or that have more RAM.

👉 **Tip:** If you want to see how the panorama looks without the areas created by Content Aware Fill, hide the top layer.



## Getting the best results with Photomerge

If you know you're going to create a panorama when you take your shots, keep the following guidelines in mind to get the best result.

**Overlap images approximately 40%.** You want enough overlap that Photomerge can assemble the panorama but not so much that it can't blend the images.

**Use a consistent focal length.** If you use a zoom lens, keep the focal length the same for all the pictures in the panorama.

**Use a tripod if possible.** You'll get the best results if the camera is at the same level when you take each of the shots. A tripod with a rotating head makes that easier.

**Take the photos from the same position.** If you're not using a tripod with a rotating head, try to stay in the same position as you take the photos, so that they are taken from the same viewpoint.

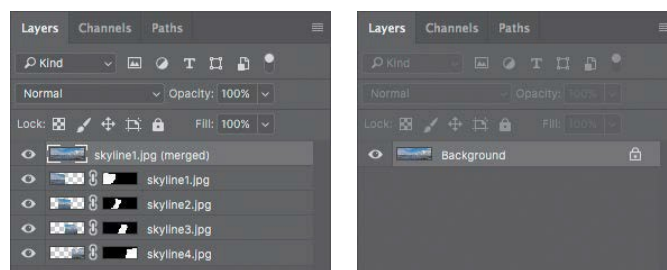
**Avoid distortion lenses.** They can interfere with Photomerge. (The Auto option does adjust for images you take with fisheye lenses, though.)

**Use the same exposure.** The images will blend more gracefully if they all have the same exposure. For example, either use flash for all the images or for none of them.

**Try different layout options.** If you don't like the results you get when you create the panorama, try again using a different layout option. Often, Auto selects the appropriate option, but sometimes you'll get a better image with one of the other options.

9 Choose Select > Deselect.

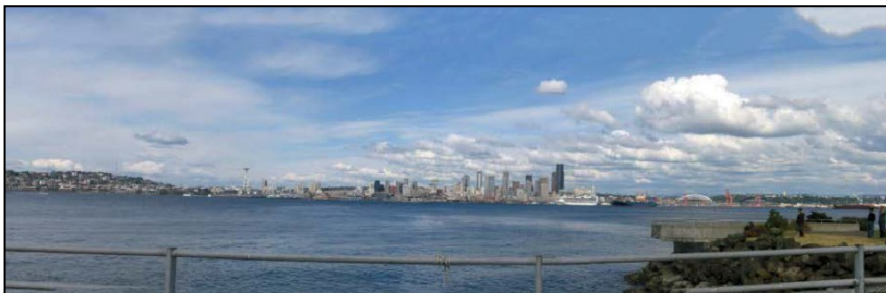
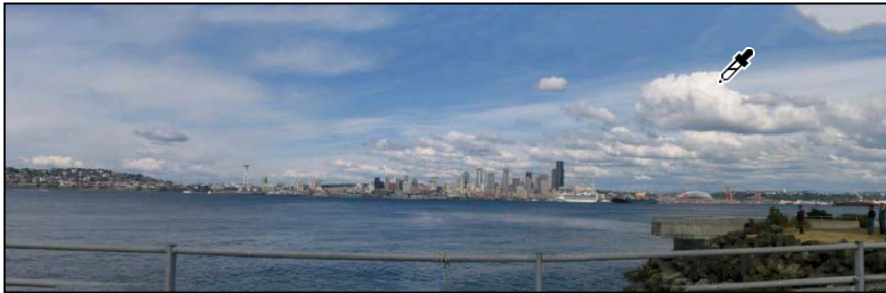
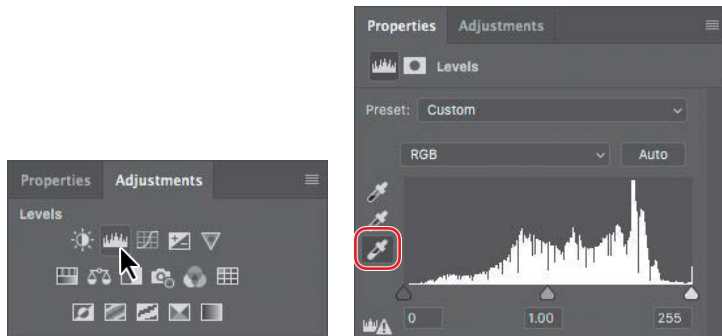
10 Choose Layer > Flatten Image.



11 Choose File > Save As. Choose Photoshop for the Format, and name the file **Skyline\_Working.psd**. Save the file in the Lesson05 folder. Click Save.

The panorama looks great, but it's a little dark. You'll add a Levels adjustment layer to brighten it a little bit.

- 12 Click the Levels icon in the Adjustments panel to add a Levels adjustment layer.
- 13 Select the White Point eyedropper in the Properties panel, and then click on a white area of the clouds.



The sky gets bluer, and the entire image brightens.

- 14 Save your work. Click OK in the Photoshop Format Options dialog box. It's that easy to create a panorama!


● **Note:** In this case, the Photoshop Format Options alert may appear because a layer was added. The Photoshop Format Options dialog box usually won't appear for Photoshop documents containing only a Background layer.

## Filling empty areas when cropping

The panorama image looks great except for two things: The horizon is slightly tilted, and the lower handrail is incomplete where the rocks on the right descend into the water. If you were to rotate the image, empty areas might appear at the corners, requiring a tighter crop and losing parts of the image. Fortunately, the same Content-Aware technology that filled in empty areas resulting from the panorama merge can also fill in empty areas that can result from straightening and cropping.

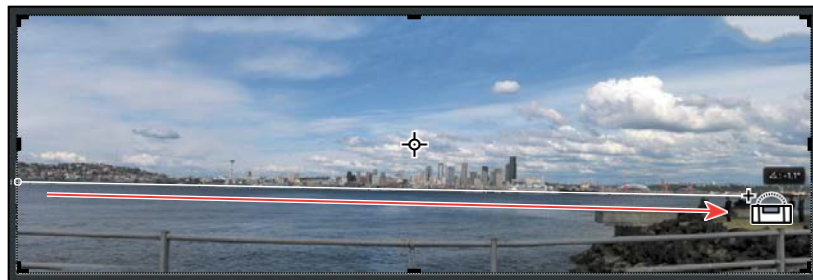
- 1 Make sure **Skyline\_Working.psd** is open, and make sure the Background layer is selected in the Layers panel.
- 2 Choose Layer > Flatten Image.
- 3 In the Tools panel, select the Crop tool. The crop rectangle and its handles appear around the image.



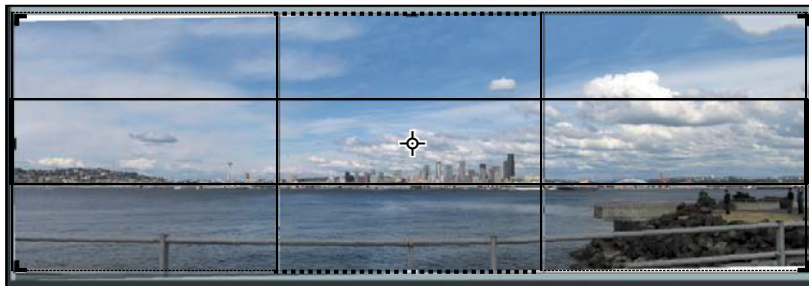
- 4 In the options bar, select the Straighten button (  ) and make sure Content-Aware is selected.



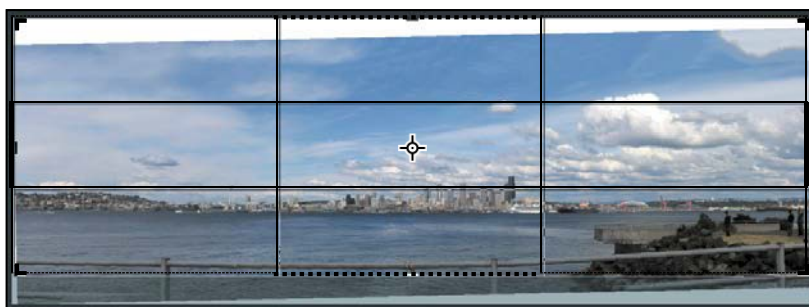
- 5 Position the Straighten pointer on the horizon at the left edge of the image, and drag to the right to create a Straighten line that's aligned with the horizon; release the mouse button when you reach the end of the horizon at the right edge of the image.



Notice there is now white space that needs to be filled near the corners.



- 6 With the crop rectangle still active, drag the image down until the incomplete part of the lower guardrail is outside the crop rectangle.



- 7 Click the Commit button in the options bar (✓) to apply the current crop settings. Content-Aware Crop fills in the empty areas at the top and sides of the image.



- 8 Save your changes, and close the document.

## Correcting image distortion

The Lens Correction filter fixes common camera lens flaws, such as barrel and pincushion distortion, chromatic aberration, and vignetting. *Barrel distortion* is a lens defect that causes straight lines to bow out toward the edges of the image. *Pincushion distortion* is the opposite effect, causing straight lines to bend inward. *Chromatic aberration* appears as a color fringe along the edges of image objects. *Vignetting* occurs when the edges of an image, especially the corners, are darker than the center.

Some lenses exhibit these defects depending on the focal length or the f-stop used. The Lens Correction filter can apply settings based on the camera, lens, and focal length that were used to make the image. The filter can also rotate an image or fix image perspective caused by tilting a camera vertically or horizontally. The filter's image grid makes it easier and more accurate to make these adjustments than using the Transform command.

- 1 Choose File > Browse In Bridge.
- 2 Navigate to the Lesson05 folder if you're not already there, and then look at the Columns\_Start.psd and Columns\_End.psd thumbnail previews.



Columns\_Start.psd



Columns\_End.psd

In this case, the original image of a Greek temple is distorted, with the columns appearing to be bowed. This photo was shot at a range that was too close with a wide-angle lens. You'll quickly correct the lens barrel distortion.

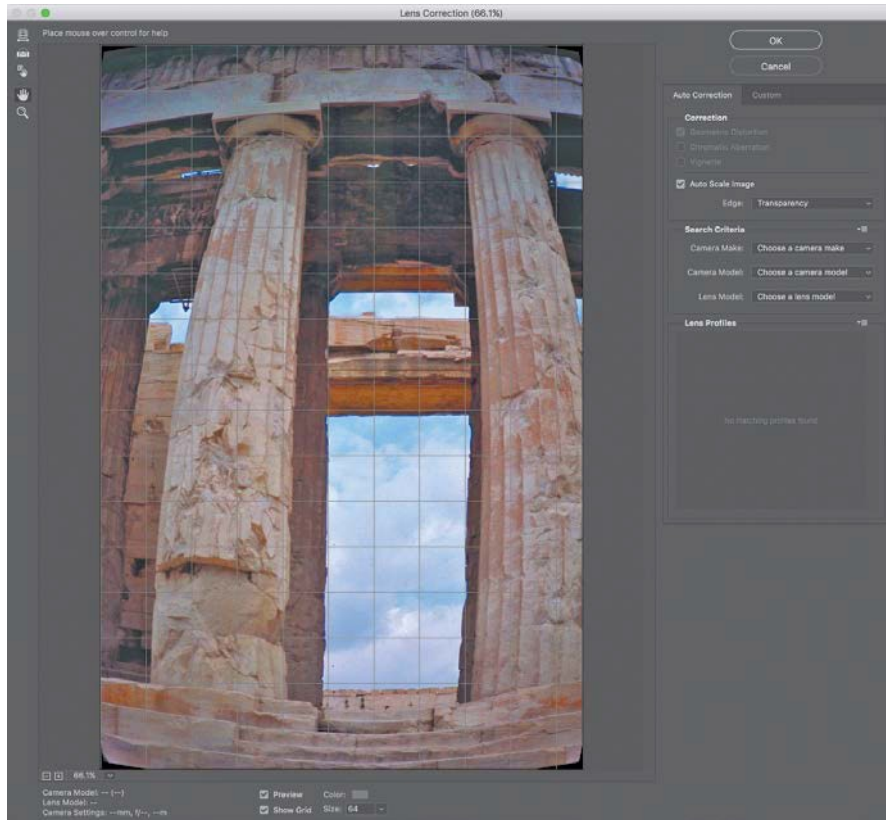
**Tip:** If the crop rectangle from the previous exercise is still visible and distracting, switch to a tool such as the Hand tool.

- 3 Double-click the Columns\_Start.psd file to open it in Photoshop.
- 4 Choose File > Save As. In the Save As dialog box, name the file **Columns\_Working.psd**, and save it in the Lesson05 folder. Click OK if the Photoshop Format Options dialog box appears.



- 5 Choose Filter > Lens Correction. The Lens Correction dialog box opens.
- 6 Select Show Grid at the bottom of the dialog box, if it's not already selected.

An alignment grid overlays the image. To the right are options for automatic corrections based on lens profiles. In the Custom tab are manual controls for correcting distortion, chromatic aberration, and perspective.



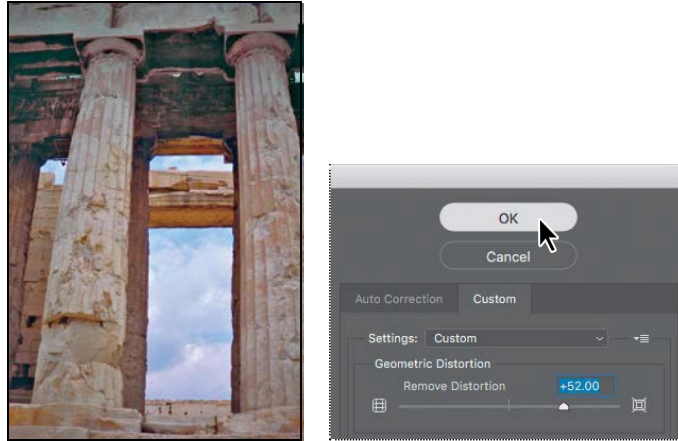
**Tip:** Watch the alignment grid as you make these changes so that you can see when the vertical columns are straightened in the image.

The Lens Correction dialog box includes auto-correction options. You'll adjust one setting in the Auto Correction tab and then customize the settings.

- 7 In the Correction area of the Auto Correction tab, make sure Auto Scale Image is selected, and that Transparency is selected from the Edge menu.
- 8 Select the Custom tab.
- 9 In the Custom tab, drag the Remove Distortion slider to about **+52.00** to remove the barrel distortion in the image. Alternatively, you could select the Remove Distortion tool (⌘) and drag in the image preview area until the columns are straight. The adjustment causes the image borders to bow inward. However, because you selected Auto Scale Image, the Lens Correction filter automatically scales the image to adjust the borders.



**10** Click OK to apply your changes and close the Lens Correction dialog box.



The curving distortion caused by the wide-angle lens and low shooting angle is eliminated.

- 11** (Optional) To see the effect of your change in the main image window, press Ctrl+Z (Windows) or Command+Z (Mac) twice to undo and redo the filter.
- 12** Choose File > Save to save your changes, click OK if the Photoshop Format Options dialog box appears, and then close the image.



The temple looks much more stable now!

## Extending depth of field

When you're shooting a photo, you often have to choose to focus either the background or the foreground. If you want the entire image to be in focus, you can take two photos—one with the background in focus and one with the foreground in focus—and then merge the two in Photoshop.

Because you'll need to align the images exactly, it's helpful to use a tripod to keep the camera steady. Even with a handheld camera, though, you can get some amazing results. In this exercise, you'll add depth of field to an image of a wine glass in front of a beach.

- 1 Choose File > Browse In Bridge.
- 2 Navigate to the Lesson05 folder, if you're not there already, and then look at the Glass\_Start.psd and Glass\_End.psd thumbnail previews.



*Glass\_Start.psd*

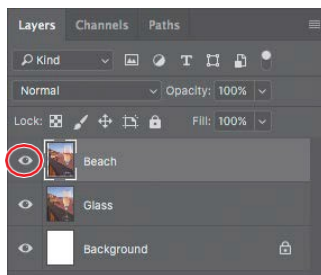
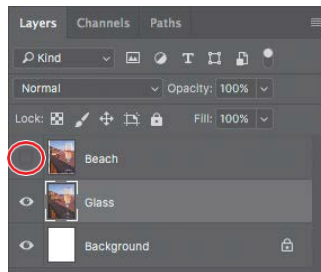


*Glass\_End.psd*

The first image has two layers. Depending on which layer is visible, either the glass in the foreground or the beach in the background is in focus. You'll extend the depth of field to make both clear.

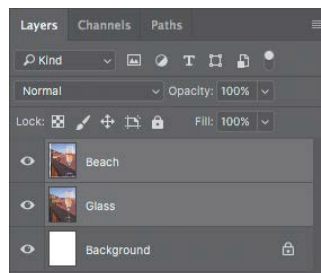
- 3 Double-click the Glass\_Start.psd file to open it.
- 4 Choose File > Save As. Name the file **Glass\_Working.psd**, and save it in the Lesson05 folder. Click OK if the Photoshop Format Options dialog box appears.

- 5 In the Layers panel, hide the Beach layer, so that only the Glass layer is visible. The glass is in focus, but the background is blurred. Then, show the Beach layer again. Now the beach is in focus, but the glass is blurred.



You'll merge the layers, using the part of each layer that is in focus. First, you need to align the layers.

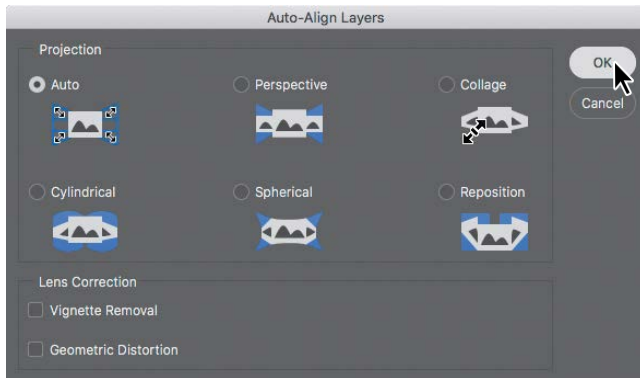
- 6 Shift-click to select both of the layers.



- 7 Choose Edit > Auto-Align Layers.

Because these images were shot from the same angle, Auto will work just fine.

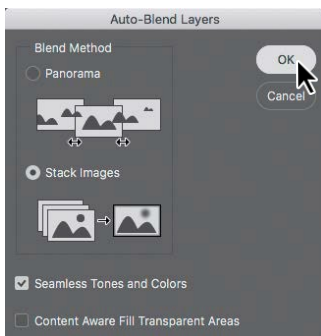
- 8 Select Auto, if it isn't already selected. Make sure neither Vignette Removal nor Geometric Distortion is selected. Then click OK to align the layers.



**Tip:** When aligning layers that are not involved in a panorama, Reposition is often the best alignment option to use. In this exercise, Reposition is the projection that the Auto option chose.

Now that the layers are perfectly aligned, you're ready to blend them.

- 9 Make sure both layers are still selected in the Layers panel. Then choose Edit > Auto-Blend Layers.
- 10 Select Stack Images and Seamless Tones And Colors, if they aren't already selected. Make sure Content Aware Fill Transparent Areas is not selected, and then click OK.



**Tip:** The technique in this exercise, called *focus stacking*, is useful for macro photography, where depth of field is typically very shallow. Multiple images with shallow depth of field are shot at different focus distances, and then merged.

- 11 Save your work, and close the file.

Both the wine glass and the beach behind it are in focus.

# Moving objects with the Content-Aware Move tool

You've used the content-aware features in some pretty impressive ways in earlier lessons, and to fill in the sky in the panorama project in this lesson. Now you'll use the Content-Aware Move tool to move something in an image (in this case, a duck) and have Photoshop convincingly fill in the area where the item you moved used to be. You can also use the Content-Aware Move tool to extend a portion of an image, such as a stand of trees or fence posts, seamlessly.

- 1 Choose File > Browse In Bridge.
- 2 Navigate to the Lesson05 folder, if you're not there already, and then look at the Ducks\_Start.jpg and Ducks\_End.psd thumbnail previews.



Ducks\_Start.jpg

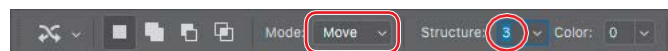


Ducks\_End.psd

You'll use the Content-Aware Move tool to nudge the last duck into a cluster with its companions.

- 3 Double-click the Ducks\_Start.jpg file to open it in Photoshop.
- 4 Choose File > Save As, choose Photoshop for the format type, and name the new file **Ducks\_Working.psd**. Click Save.
- 5 Select the Content-Aware Move tool (👉), which is grouped with the Red Eye Removal tool (👁️) and may be hidden under it.
- 6 In the options bar, choose Move from the Mode menu, and enter **3** in the Structure field.

**Tip:** If you have trouble finding the Content-Aware Move tool, click the Search icon (🔍) at the top right corner of the Photoshop application window, and enter the name of the tool.



## More on the Content-Aware Move tool

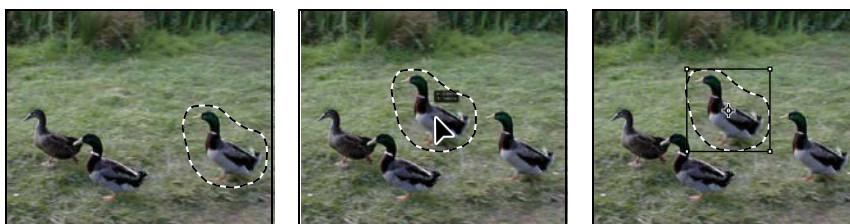
The Content-Aware Move tool is very impressive when you're working with some images, and less impressive with others. For best results, use it when the background is consistent enough that Photoshop will be able to recognize and replicate a pattern. In the image of ducks, the grass and dirt are fairly consistent and repetitive. You can also try moving objects with backgrounds such as meadows, solid-colored walls, sky, wood grains, or water.

The Extend mode of the Content-Aware tool can be useful with architectural subjects, especially when they're shot on a plane parallel to the camera; it's less effective for subjects shot at an angle.

If you're working with an image that has multiple layers, select **Sample All Layers** in the options bar to include them all in the selection.

The **Structure** and **Color** options define how closely the results reflect the existing image patterns. In the Structure settings, 1 is the loosest and 5 the strictest. The Color settings range from 0 (no color adaptation) to 10 (matching the color as closely as possible). Experiment with the options while the object is still selected to see which give you the best results in a particular image. You may want to hide the selection edges (choose **View > Show > Selection Edges** or **View > Extras**) to see how the object integrates into its new position.

- 7 Draw a selection marquee around the third duck, with a margin large enough to include the grass and dirt around it.
- 8 Drag the selection to the left, slightly above the second duck, so that the ducks are clustered.



When you release the mouse, the dragged duck appears with a transformation rectangle and handles. These transformation controls give you an opportunity to rotate and scale the content, but you don't need to do that in this step.

- 9 Click the **Commit Transform** button (✓) in the options bar.



- 10** Change the Structure setting to **5**, which requires stricter adherence to the pattern, and observe how the image changes. Then change the Structure setting to **1**, which results in a much looser adaptation. You can also experiment with different Color settings, from 0 to 10.

Now that you've committed to the move, Photoshop fills in the area the duck left behind. How it creates the area depends on the Structure and Color settings in the options bar. You can try different options while the selection remains active.

- 11** Choose the Structure and Color options you think look best. Then choose **Select > Deselect**.

The three ducks are in a tighter formation now, and you can't tell that the third duck used to be in a different position.



- 12** Save your work, and close the file.



## Extra credit

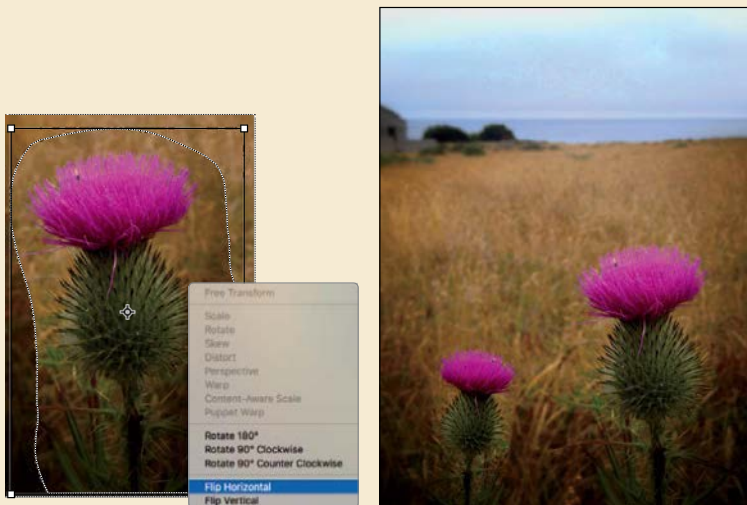
### Transformations with the Content-Aware Move tool

With the Content-Aware Move tool, you need only a few quick steps to duplicate a thistle so that it combines seamlessly with the background, and is also different enough that it doesn't look like an exact copy of the original.

- 1 Open Thistle.psd in your Lesson05/Extra Credit folder.
- 2 Select the Content-Aware Move tool (🔗), which is grouped with the healing brush tools.
- 3 In the options bar, choose Extend from the Mode menu. Choosing Extend duplicates the thistle; if you just want to reposition the single thistle, you would choose Move.



- 4 With the Content-Aware Move tool, draw a selection marquee around the thistle, with a margin large enough to include a little of the grass around it.
- 5 Drag the selection to the left, and drop it in the empty area of grass.
- 6 Right-click (Windows) or Control-click (Mac) the dragged thistle, and choose Flip Horizontal.
- 7 Drag the top left transformation handle to make the thistle smaller. If you think the copy of the thistle should be farther from the original, position the pointer inside the transformation rectangle (but not over the anchor point) and drag the thistle copy slightly to the left.
- 8 Press Enter or Return to make the transformations permanent, leaving the content selected so you can adjust the Structure and Color options to improve how the new thistle blends with the background.
- 9 Choose Select > Deselect, and save your changes.



## Adjusting perspective in an image

The Perspective Warp feature lets you adjust the way objects in your image relate to the scene. You can correct distortions, change the angle from which an object appears to be viewed, or shift the perspective of an object so that it merges smoothly with a new background.

Using the Perspective Warp feature is a two-step process: defining the planes and adjusting them. You start in Layout mode, drawing *quads* to define two or more planes; it's a good idea to align the edges of the quads so that they are parallel with the lines of the original object. Then you switch to Warp mode, and manipulate the planes you defined.

You'll use Perspective Warp to merge images with different perspectives.

- 1 Choose File > Browse In Bridge.
- 2 Navigate to the Lesson05 folder, if you're not there already, and then look at the Bridge\_Start.psd and Bridge\_End.psd thumbnail previews.



*Bridge\_Start.psd*



*Bridge\_End.psd*

In the Bridge\_Start.psd file, the image of the train has been combined with the image of a trestle bridge, but their perspectives don't match. If you're illustrating a story about a flying train that is making a landing on a trestle bridge, this might be perfect. But if you want a more realistic image, you'll need to adjust the perspective of the train to put it firmly on the tracks. You'll use Perspective Warp to do just that.

- 3 Double-click the Bridge\_Start.psd file to open it in Photoshop
- 4 Choose File > Save As, and rename the file **Bridge\_Working.psd**. Click OK in the Photoshop Format Options dialog box.

- 5 Select the Train layer.



The tracks are on the Background layer. The train is on the Train layer. Because the Train layer is a Smart Object, you can apply Perspective Warp and then modify the results if you're not satisfied.

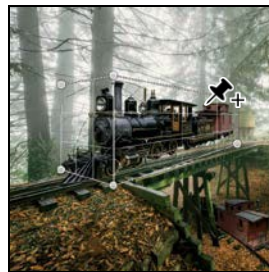
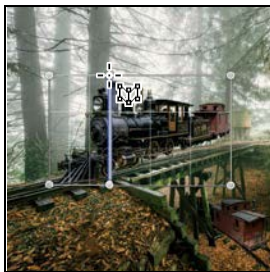
- 6 Choose Edit > Perspective Warp. This feature requires a fair amount of processing power. If Perspective Warp is grayed out when you try to select it, make sure you have a current video card and a minimum of 512 MB VRAM.

A small animated tutorial appears, showing you how to draw a quad, which defines a plane.

- 7 Watch the animation, and then close it.

Now you'll create quads to define the planes of the train image.

- 8 Draw the quad for the side of the train: Click above the top of the smokestack, drag down to the railroad tie below the front wheel, and then drag across to the end of the caboose. The plane is currently a rectangle.
- 9 Drag a second quad for the front of the train, dragging across the cowcatcher at the bottom and into the trees at the top. Drag it to the right until it attaches to the left edge of the first quad.
- 10 Drag the corners of the planes to match the angles of the train. The bottom line of the side plane should run along the bottom of the train wheels; the top edge should border the top of the caboose. The front plane should mirror the lines of the cowcatcher and the top of the light.



Now that the quads are drawn, you're ready for the second step in the process: warping.

- 11 Click Warp in the options bar. Close the tutorial box that shows you how to warp the plane.
- 12 Click the Automatically Straighten Near Vertical Lines button, next to Warp in the options bar.



This makes the train appear properly vertical, making it easier to adjust the perspective accurately.

- 13 Drag the handles to manipulate the planes, moving the back end of the train down and into perspective with the tracks. Exaggerate the perspective toward the caboose for a more dramatic result.
- 14 Warp other parts of the train as needed. You may need to adjust the front of the train. Pay attention to the wheels; make sure you don't distort them as you warp the perspective.



While there are precise ways to adjust perspective, in many cases you may need to trust your eyes to tell you when it looks right. Remember you can return to tweak it again later, because you're applying Perspective Warp as a Smart Filter.

- 15 When you're satisfied with the perspective, click the Commit Perspective Warp button (✓) in the options bar.
- 16 To compare the changed image with the original, hide the Perspective Warp filter in the Layers panel. Then show the filter again.

If you want to make further adjustments, double-click the Perspective Warp filter in the Layers panel. You can continue to adjust the existing planes, or click Layout in the options bar to reshape them. Remember to click the Commit Perspective Warp button to apply your changes.

- 17 Save your work, and close the file.



## Changing the perspective of a building

In the exercise, you applied Perspective Warp to one layer to change its relationship with another. But you can also use Perspective Warp to change the perspective of an object in relationship to others in the same layer. For example, you can shift the angle from which you view a building.

In this case, you apply Perspective Warp the same way: In Layout mode, draw the planes of the object you want to affect. In Warp mode, manipulate those planes. Of course, because you're shifting angles within a layer, other objects on the layer will move, too, so you need to watch for any irregularities.



*In this image, as the perspective of the building shifted, so did the perspective of the trees surrounding it.*



## Camera Shake Reduction

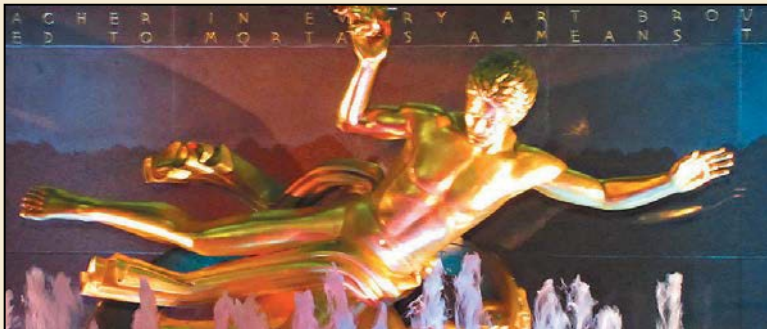
Even with a steady hand, unintended camera motion can occur with slow shutter speeds or long focal lengths. The Camera Shake Reduction filter reduces the resulting camera shake, giving you a sharper image.



*Before applying the Camera Shake Reduction filter*

You'll get the best results if you apply the filter to a particular part of an image, rather than the entire image. It can be especially useful if text has become illegible due to camera shake.

To use the Camera Shake Reduction filter, open the image, and choose **Filter > Sharpen > Shake Reduction**. The filter automatically analyzes the image, selects a region of interest, and corrects the blur. Use the Detail loupe to examine the preview. That may be all you need to do. If so, click **OK** to close the Shake Reduction dialog box and apply the filter.



*After applying the Camera Shake Reduction filter*

You can adjust how Photoshop interprets the Blur Trace, which is the shape and size of the camera shake that Photoshop identified. You can change the region of interest or adjust its size, adjust the Smoothing and Artifact Suppression values, and more. For full information about the Camera Shake Reduction filter, see Photoshop Help.