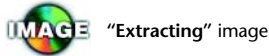


Extracting an Image

Overview Use the **Extract** command to select the subject from the background; to improve the edge of the extracted subject, make a layer mask from the extracted subject's transparency mask and then modify the mask; import the new background; use adjustment layers, with masks if needed, to modify the color of the ambient and directional lighting to make the two layers match.



JHD



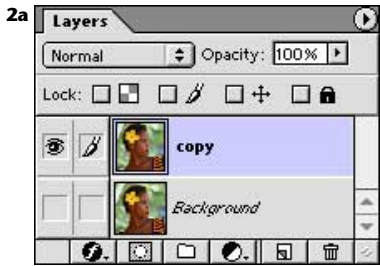
The original subject and background photos

ORIGINAL PHOTOS: CORBIS IMAGES; ROYALTY FREE, CARIBBEAN GETAWAY

WHEN YOU WANT TO COMBINE a subject from one photo with a background from another, one of the main tasks is making a clean selection of the subject from its original background. If you're working with a portrait, that usually means solving "the hair problem": How do you make a selection that separates the hair from the background with a result that looks natural instead of too smooth or too spiky? There's no simple one-size-fits-all solution to this problem. The approach that works best depends on whether the hair color contrasts strongly with the background, and whether the wisps of hair are in sharp focus or soft, among other things. But Photoshop 6's **Extract** command has three improvements over past versions that can make it easier to select a subject: (1) the **Smart Highlighting** function makes the Edge Highlighter tool automatically follow the edge; (2) the **Cleanup tool** can subtract from or add to an extracted image; and (3) the **Edge Touchup tool** sharpens and smooths soft or rough edges of an extraction. (For more about using the **Extract** command, see "Extraction Pointers" (opposite) and "Extracting" on page 33.

Even when the hair problem is solved and the selection is made, there are other important factors that will help to make the subject at home in its new environment so the composite will be convincing:

- The ambient lighting, most evident in the color and density of the shadows, has to look the same for both the subject and the background.



Before the Extract command was used, we made a copy of the image for safekeeping.

EXTRACTION POINTERS

Here are some general rules of procedure for highlighting the edge when you use the Extract command (Image, Extract) to isolate a subject from a background:

- 1** Some edges may be “fuzzy” because they are partly out of focus or partially transparent, or because they include highlights or shadows that have picked up color from the background. Typical edges of this kind include wisps of hair against a background, or tree leaves or blades of grass against the sky. To highlight fuzzy edges, use the Edge Highlighter tool with a broad brush (a large Brush Size setting).
- 2** Where the edge you want to select is distinct and high-contrast, turn on the Smart Highlighting option for the Edge Highlighter.
- 3** After you’ve surrounded the subject with highlight, filled the highlight with the Fill tool, and turned on Preview, use the *Cleanup* tool in spots where you want to take away from the extracted image and make it *more transparent*. Use the *Cleanup* tool with the *Alt/Option* key held down where you want to restore the image so it’s *more opaque*.

- The directional lighting also has to be consistent.
- The depth of focus has to look realistic. If the subject is entirely sharp and in focus, the background can be either in focus or blurred. But if the subject shows a short depth of field, with some parts in sharp focus and others soft, the background will need to be soft.
- The film grain or “noise” in the component images has to match (Simulating or adjusting film grain is covered in “Blurring the Background, but Keeping the Grain” on pages 191–194).

1 Analyzing the photos. Select the two photos you want to combine, and crop if necessary. In choosing the subject and background, look for images whose lighting doesn’t “fight” uncontrollably. The sunset sky we chose for our ad image had ambient lighting that was opposite in color from the lighting in our portrait — a warm golden brown instead of a cool green **1**. But we knew we would be able to fix this difference by adjusting the color of the green-tinted highlights in the portrait (in step 5). The direction of the lighting in the background photo was straight into the camera, so there was nothing to conflict with the basic directional lighting in the portrait, which came from behind the woman and from her left (notice the highlights on the shoulders). So we were confident that the two images could be made into a convincing composite.

2 Starting the extraction. The Extract command (Image, Extract) is often Photoshop’s best tool for solving the hair problem and other selection bugaboos. But using this command is a “destructive” process — it permanently removes pixels. So before you Extract, duplicate your image layer for safekeeping by dragging its name in the Layers palette to the Create New Layer button at the bottom of the palette **2a**. (Alternatively, you could make a Snapshot in the History palette as described on page 30, but History doesn’t persist beyond the current working session, so the extra layer is safer.) Click the eye icon of the bottom image layer to turn off its visibility so you’ll be able to see the result of your extraction.

Next open the Extract dialog box (the shortcut is Ctrl-Alt-X in Windows, ⌘-Option-X on the Mac). Choose a color from the pop-out Highlight menu. We changed the default Green to Red, since the background of the photo was green.

With the Edge Highlighter tool chosen, set the Brush Size: A large brush works well for soft or fuzzy edges. We chose a

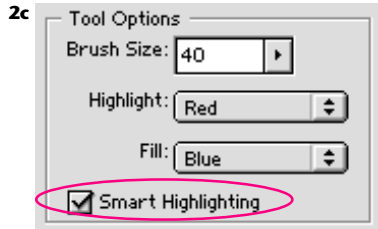
NAVIGATING THE PREVIEW

To temporarily turn on navigation tools without dropping the Edge Highlighter, use these keyboard shortcuts:

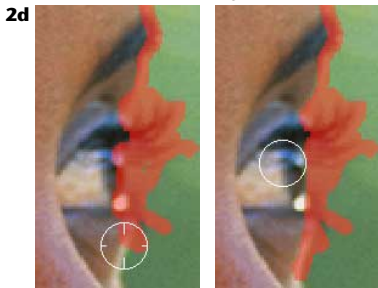
- Hold down the spacebar for the Hand tool, to scroll around the image.
- Hold down Ctrl/⌘-spacebar for the Zoom tool and click to magnify the image.
- Hold down Ctrl-Alt-spacebar (Windows) or ⌘-Option-spacebar (Mac) and click to zoom out.



Using the Edge Highlighter with a large brush size and Red as the Highlight color for areas that have transparency or have the background color showing through



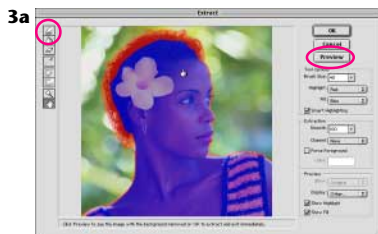
Turning on Smart Highlighting to trace the edge “magnetically”



When the Edge Highlighter is in Smart Highlighting mode, the cursor changes.

2e

Holding down the Alt/Option key turns the Edge Highlighter into a highlight eraser.



Filling the completed highlight with the Fill tool makes the Preview button available.

relatively large Brush Size (40) to select the hair. Although on first inspection the contrast between the green background and the black hair looks strong, the depth of field for this photo is very short, so some of the hair is out-of-focus and soft; also, the green background has created green highlights in the hair. A large brush would allow us to drag along the edge quickly, catching all the fine curls of hair in one sweep. Drag the Edge Highlighter to draw a highlight that overlaps both the subject and the background at its edge **2b**. This highlight defines the band where the Extract function will look for the edge when it selects the subject. In the extraction process, anything within the highlight band can be made transparent. In our image the broad strokes would help with selecting the fine detail, and would allow the hair to be selected as partially transparent, without the color cast from the background. When the extracted image was put against the new background, this semi-transparency of the hair would allow the new background to add its own color cast.

A smaller brush is better for a hard edge, or if there are two edges close together. In our image, we could use a small brush to make a sharp selection of the left side of the neck. But instead of resetting the Brush Size, we clicked the Smart Highlighting checkbox **2c**. With Smart Highlighting turned on, the cursor changes **2d** and Edge Highlighter becomes “magnetic,” automatically clinging to the edge as you drag the tool and *automatically narrowing the brush whenever possible*.

In our portrait there were really two high-contrast edges on the woman’s profile — the green-against-white edge between the background and the white-against-brown edge between highlight and normal skin tone. We zoomed in as described in the “Navigating the Preview” tip on page 53 for a close-up, in order to

REPAIRS ON-THE-FLY

If you make a mistake with the Edge Highlighter and have to make a repair:

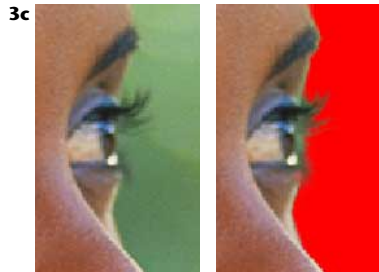
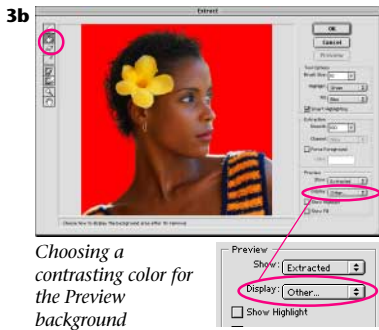
- You can quickly add by dragging the tool back over an area you missed.
- Or to remove some of the edge material you’ve applied, hold down the Alt/Option key to temporarily turn the Edge Highlighter into the Eraser.

CHANGING BRUSH SIZE

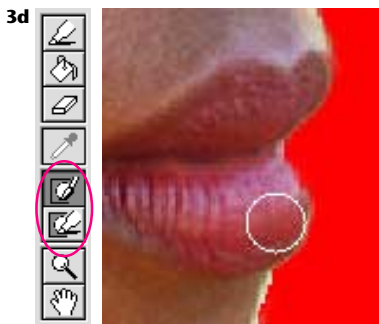
The control keys for resizing the brush tip for the Edge Highlighter, Cleanup, and Edge Touchup tools in the Extract dialog box are the same as for Photoshop’s painting tools: You can use the bracket keys to increase or decrease brush size as you work by pressing “[” to shrink the brush, or “]” to enlarge it.

THE DUMB/SMART TOGGLE

Unfortunately, “Smart Highlighting” is really only smart about sharp, high-contrast edges. So as you drag from an area with a high-contrast edge to an area of low contrast, you’ll need to turn off Smart Highlighting and operate the Edge Highlighter “by hand.” Holding down the Ctrl/⌘ key automatically switches out of Smart Highlighting if you have it turned on, or switches into it if you have it turned off. Then release the key to toggle back again.



Switching the “Show” setting from Original (left) to Extracted to check the edge



The Cleanup tool (shown here) and the Edge Touchup tool (below it in the Extract tool palette) become available after you click the Preview button, so you can refine the edge before finalizing the extraction.



The subject layer after extraction

follow the edge. We had to switch back to “manual” operation of the Edge Highlighter (by holding down the Ctrl/⌘ key) to follow the highlight on the shoulders in order to “tell” the Edge Highlighter that we wanted to keep, not cut away, the hot white edges. Left to its own devices, Smart Highlighting would have followed the higher-contrast edge between the white highlight and the darker skin.

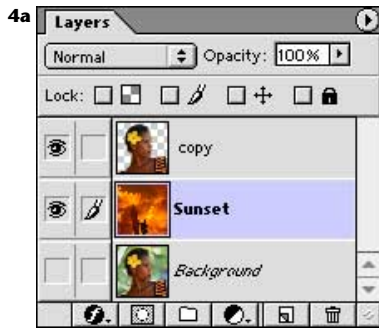
The highlighting is complete when the subject is entirely enclosed within the highlight, except that you don’t have to drag along the outside edges of the image. For instance, in this photo the highlight extended from the point where the shoulder intersects the bottom edge of the photo on the left, up and around the profile to the right, and over to where the other shoulder reaches the right edge of the photo.

3 Completing the extraction. Before you can preview the selection you’ve made with the Edge Highlighter, you need to add a fill. Select the Extract box’s Fill tool and click inside your highlight to fill the enclosed area and make the Preview button available **3a**. In the Extraction section of the dialog box, you can set the Smooth value to 100 to make an extraction with as little “debris” at the edge as possible; you’ll be able to smooth it more later with the Edge Touchup tool if needed, as described below. Click the Preview button to make the background disappear.

In the Preview section at the bottom of the dialog box, you can change the Display setting to a color that contrasts with the original background of the photo. This will give you the best indication of how good your extraction is. If you don’t find a workable color in the Display menu, choose Other and pick a color; we picked a red to contrast with the original green **3b**. By switching back and forth between Show Extracted and Show Original in the Preview section, you can compare the extracted edge with the original **3c**.

To make repairs, in the Extracted view use the Cleanup tool (“C” is the keyboard shortcut) on the edge to erase excess material **3d**. What’s really exciting is that *you can also use the Cleanup tool with the Alt/Option key held down, to bring back material that was lost in the extraction*. Besides using the bracket tools to change brush size, you can change the pressure (or opacity) of the tool as you work by pressing the number keys (“1” through “9” for 10% to 90%, and “0” for 100%). Use a low opacity setting for a softened edge. In general, using a fairly low opacity and “scrubbing” with the tool gives good results. The Edge Touchup tool can be used to smooth the edge. It automatically removes or consolidates edge pixel debris.

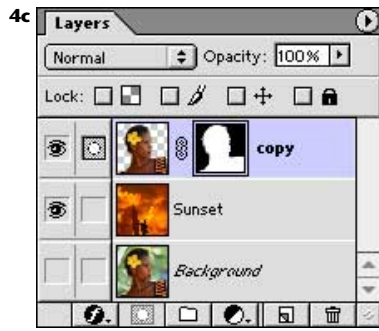
As you touch up the edge and get ready to leave the Extract dialog box, keep in mind that it’s better to have too much image material than not enough, because you can further trim the edge after extraction (as described in step 4), but it can be a lot harder to add back. When you’ve examined and fine-tuned the entire edge as well as you can, click OK to finalize the extraction and close the Extract dialog box **3e**.



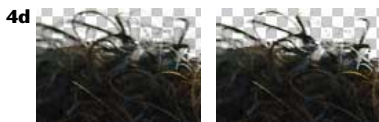
Bringing in the new background image



The transparency mask loaded as a selection



A layer mask, made from the transparency mask selection, added to the subject layer



The silhouetted subject before (left) and after adding the layer mask



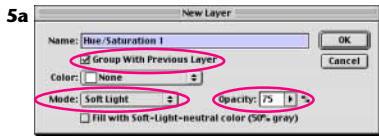
Blurring the mask to soften the edge

4 Combining the subject with the new background. Use the Move tool to drag and drop the new background image into the portrait file; then drag the imported layer's name in the Layers palette to a position under the extracted layer **4a**. Use the Move tool to reposition the image if you like. Or scale it by pressing Ctrl/⌘-T (for Edit, Free Transform) and dragging a corner handle. You can also blur the image (Filter, Blur, Gaussian Blur) to soften the focus if needed, as we did here.

Now that the new background is in place, you may want to further refine the edge of your extracted subject. A flexible, nondestructive way to do that is to make a layer mask that exactly fits the subject and then modify the edge of the mask. First make a selection by loading the transparency mask that's inherent in the subject layer (Ctrl/⌘-click on the layer's thumbnail in the Layers palette) **4b**. Then add the layer mask (click the Add Layer Mask icon at the bottom of the palette) **4c**. Because of the semi-transparency at the edge of the transparency mask, the layer mask that you've made from it will automatically be a bit smaller than the transparency mask, so the layer mask will trim the edge slightly. This change by itself may smooth the edge or get rid of unwanted background color **4d**.

If you need to refine the edge further, you can now paint black on the layer mask to hide more of the extracted image (try the Airbrush with a low Pressure setting). Or use the Blur tool on areas of the edge that you want to soften; we did this for the sweater on the shoulders. Or use Filter, Blur, Gaussian Blur to soften the entire edge **4e**, or just a selected part of it. If you don't like what your painting or blurring did, paint on the mask with white to restore parts of the original extraction edge.

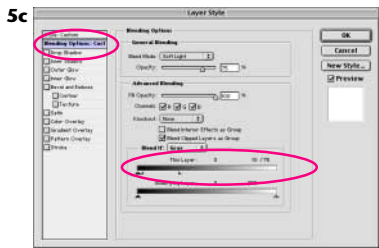
5 Adjusting the ambient lighting. Now you can make changes to the color and intensity of the lighting to make the subject look more at home in the background. To add the warm sunset glow to the ambient lighting of the portrait, we created an adjustment layer that we could use like a photographic gel. Because we knew what blend mode and Opacity we wanted to try, we held down the Alt/Option key as we clicked the Create New Adjustment Layer button (the black-and-white circle) at the bottom of the Layers palette and chose Hue/Saturation Layer from the pop-up menu. (Alt/Option-clicking brings up the New Layer dialog box.) We chose Soft Light for the mode (so we could add a tint without overwhelming the existing color) and set the Opacity at 75% as a first try. We also clicked the Group With Previous Layer box to form a clipping group so the color adjustment would affect only the subject, not the background image **5a** ("Organizing Layers" on page 38 tells more about grouping layers). Clicking OK opened the Hue/Saturation dialog box, where we clicked the Colorize checkbox (so the adjustment layer would act like a sheet of clear, colored plastic over the image) and made sure Preview was selected (so we could see the change in the



Adding a Hue/Saturation adjustment layer



Coloring and darkening the ambient light



Double-clicking on the name — not the thumbnail — of an adjustment layer brings up the Layer Style dialog box. In the Advanced Blending section you can control what part of the image's tonal range is affected by the adjustment layer. By moving the white-point slider for "This Layer," we limited the adjustment to the shadow tones; we split the slider (by holding down the Alt/Option key and dragging) to make a smooth transition (this technique is described on page 46).



Ambient lighting adjustment made with a Hue/Saturation layer

image as we experimented with the sliders). We shifted the Hue to warm up the ambient light. We also reduced the Lightness since the strong backlighting would naturally put the subject more in shadow **5b**. (Although in reality the entire face would be shaded, for our ad we limited the adjustment to the shadow tones, leaving the midtones and highlights bright enough to print well **5c, 5d**). This was accomplished by using the Advanced Blending option in the Layer Style dialog box ("Combining Interior Effects" on page 63 tells more about using the powerful Advanced Blending options).

6 Modifying the directional light. Next we used another adjustment layer, with a mask, to expand, soften, and color the highlight areas, so warm yellow light would spill over the edges of the face and shoulders. First we made a soft selection of the highlighted edges, as follows: We again loaded the subject layer's transparency mask as a selection (by Ctrl/⌘-clicking its thumbnail in the Layers palette). We shrank this selection inward (Select, Modify, Contract, using a setting of 10 for our 1000-pixel-wide image). We softened the selection (Select, Feather, using the same 10-pixel setting as we had for the Contract command), and then inverted it (Select, Inverse, or Ctrl/⌘-Shift-I), to select just the outer edge of the subject **6a**. We again Alt/Option-clicked the Create New Adjustment Layer icon and made another Hue/Saturation layer, again choosing Group With Previous Layer to add to the clipping group. We reduced the Opacity, but this time we used Overlay mode to exaggerate the contrast of the colors. We turned on the Colorize option, adjusted the Hue (to a setting of 40), and boosted the Saturation to 100. Our selection automatically became a mask for the new adjustment layer **6b**, which changed the color only at the edge of the face and shoulders, where the soft edge of the white part of the mask allowed the adjustment to affect the subject (see the final image on page 52).



The mask for targeting the second Hue/Saturation adjustment was made by loading the subject's transparency mask (top) and then contracting, softening, and inverting the selection (bottom).



A second Hue/Saturation adjustment layer was added to color and exaggerate the directional lighting at the edge of the face.