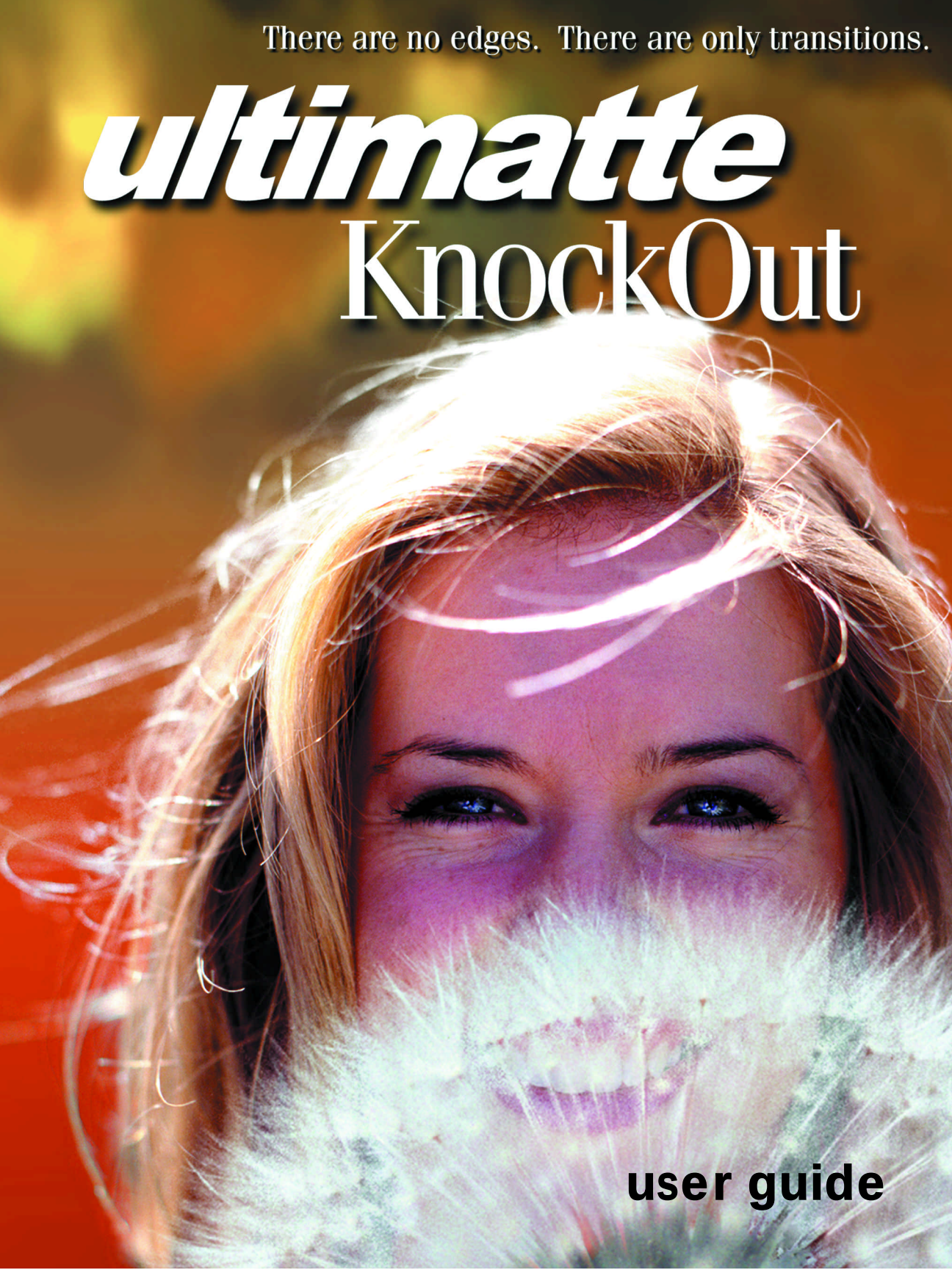
There are no edges. There are only transitions.

ultimatte KnockOut



user guide

ultimatte KnockOut

User Guide

Addendum

Release Notes

Ultimatte KnockOut Software Version 1.1 for the Macintosh

In addition to some minor bug fixes, Version 1.1 of Ultimatte KnockOut has been revised to include:

1.) Support for 16-bit images.

2.) No 4000 pixel size limitation.

3.) The UKO project file format is compatible with the new Windows version of the programme. Older projects can be made Windows compatible by simply opening them and then re-saving using version 1.1.

4.) Ultimatte KnockOut will run in Demo mode if no dongle is detected.

5.) Windows-style Tool Tips. Placing the cursor over tool icons reveals the tool's usage.

6.) ICC color profiles for image files are maintained.

It was necessary to remove two features in order to support our new feature set.

1.) Info Palette

2.) Inverse Selection

Note: Ultimatte KnockOut Software is NOT compatible with Mac OS version 8.5.X. There is a bug in the Macintosh OS for which we have not been able to provide a work-around. Apple has solved this problem with the release of OS 8.6

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Contents

Introduction **1**
- Installation 2
- System Requirements and Application Memory Size 2
- Allocating RAM to Ultimatte KnockOut 3
- Customer Support and Feedback 3
- Technical Support 3
- Product Registration 4

Getting Started **5**
- Creating Selection Lines 6
- Single Pixel Selections 6
- Selecting Shadows 7
- Preparing Your Images 8
- File Formats 8
- Cropping 8

Preferences Settings **8**
- Shadow Memory Buffer 8
- Previous Process Viewing 9
- Beep When Finished 9
- Enable Error Testing 9

Projects and Exporting **9**
- Opening an Image and Saving it as a Project 9
- Opening an Existing Project 9
- Exporting Images 10

Making and Modifying Selections **11**
- Creating the Inside Object Selection 11
- Adding to the Inside Object Selection 12
- Subtracting from the Inside Object Selection 12
- Making Single Pixel Inside Selections 12

Creating the Outside Object Selection 13
Adding to the Outside Object Selection 13
Subtracting from the Outside Object Selection 13
Using the Auto Outside Function 14
Making Single Pixel Outside Selections 14
Selecting the Transition Complexity Setting 15
Processing Images 16
Viewing the Results After Processing 17
Selection Validity Testing 17
Evaluating the Results and Reprocessing 17
Selecting Shadows 18
Using the Syringe Tools 19
Inside Syringe Tool 19
Outside Syringe Tool 20
The Edge Feather Tool 21

Processing Images 23
Selection Validity Testing 23
Viewing the Results After Processing 23
Evaluating the Results and Reprocessing 24
Exporting Your Results 24
Working with *Ultimatte KnockOut* files in Adobe Photoshop 24
To Composite the Processed Foreground
Against a New Background Image 25
Shadow Selections 25
To Manipulate the Foreground Selection in the Original Image 26

The Palettes 27
The Tools Palette 28
Inside Object Tool 28
Outside Object Tool 28
Inside Shadow Tool 29
Outside Shadow Tool 29
Inside Syringe Tool 30
Outside Syringe Tool 30
Edge Feather Tool 30
Shadow Edge Feather Tool 31
The Pan Tool 31
The Zoom Tool 31
Transition Complexity 32
The Selection Display Plaette 34
The Info Palette 34
The Underlay Color Palette 35

Menu Selections and Keyboard Equivalents **37**
The File Menu 37
The Edit Menu 37
The Tools Menu 37
The Selections Menu 38
The View Menu 39
The Windows Menu 39

Tutorials **41**
Tutorial #1: Creating Inside Object and Outside Object Selections on a Simple Image 41
Tutorial #2: Preserving Shadows 43
Tutorial #3: Using the Syringe Tools 45
Tutorial #4: Using the Edge Feather Tool 48

Hints and Tips **51**

Photography and Scanning Techniques **53**

Index **55**

Introduction

There are no edges. There are only transitions.

original

alpha channel produced by KnockOut

composite

Ultimatte KnockOut approaches the task of masking an image from a unique perspective. Most masking programs, whether plug-ins or stand-alone applications, are designed to help you precisely and speedily find an object's edges. This can be useful when dealing with complicated shapes with simple edge transitions. Once the edges are defined, and a corresponding mask channel is generated, all that remains is to soften the edges an appropriate amount and the image is ready for the finishing touches and compositing. The limitations of these techniques are well known to those skilled in the art. Hair detail is always one of the 'finishing touches' that can require hours of work and the result is always a compromise. Before the availability of *Ultimatte KnockOut*, blurred or out-of-focus edges, smoke, glass, shadows and other transparent or translucent objects were virtually impossible to mask properly.

The limitations of other masking software always become apparent when soft transitions exist. *Ultimatte KnockOut* stands apart from all others in that it recognizes that there really are no edges. There are only transitions. Even the sharpest edge has a transition where at least one pixel is a mixture of the color of the foreground subject and whatever color was behind it. Depending on such factors as motion (camera or subject), depth of field, film resolution, scanning resolution, lens quality, or the actual softness or transparency of the subject itself, edge transitions can vary from a couple of pixels to a transition that can nearly fill the frame. The unique strength of *Ultimatte KnockOut* is that it will reproduce the soft transitions of foreground edges, however wide or variable in density, while removing any trace of the visible back-

ground in that transition. When this 'knocked out foreground' is combined with a new background the transitions will have the same transparency as the original.

The process required to achieve these results is simple. Two selection lines, **Inside Object** and **Outside Object,** (represented by lines of "crawling ants"), are drawn using the program's selection tools. Remembering that all edges are transitions, the **Inside Object** selection line is drawn within the foreground subject as close to the edge of the transition as is needed to insure that the colors through which the line passes are the same as the colors adjacent to the transition itself. The **Outside Object** line, using this same principal, is drawn through the background area surrounding the foreground subject. When these boundary lines are complete, activating the 'process' function enables the special logic that will magically knock out the foreground image from the background, preserving transparencies and all of the fine detail required to give realistic results. Shadows are preserved using the same technique just described. By drawing with the **Inside Shadow** and **Outside Shadow** tools a separate alpha channel for the shadow will result.

Installation

With the computer shut down, attach the hardware security key on the Apple Desktop Bus which can be found on the back of the computer where the keyboard is normally connected (insert the keyboard into the security key) or between your keyboard and mouse. Restart the computer to activate it. Install *Ultimatte KnockOu*t by double-clicking on the Installer icon and following the directions which appear onscreen.

System Requirements and Application Memory Size

Ultimatte KnockOut requires Macintosh OS System 7.5 or higher running on a PowerPC or G3 system. The amount of RAM that *Ultimatte KnockOut* requires depends upon the size of the image with which you are working and your **Preferences** settings. You need to have a minimum of at least five times as much free RAM (eight times recommended) as the largest image size you wish to process, plus about two - three megabytes. For example, 10MB images would require a minimum of approximately 53MB of free RAM.

You can maximize the feature availability of *Ultimatte KnockOut* by increasing the application memory size. If you have sufficient RAM, you can allocate some of it to *Ultimatte KnockOut* and some to other programs so that they can be active at the same time. If you have limited RAM, run *Ultimatte KnockOut* by itself and use the following steps to maximize the amount of RAM available to the program.

Allocating RAM to Ultimatte KnockOut:

1.) Start up your computer and choose **About This Macintosh** from the **Apple** menu before running any applications. (You cannot change the application memory size while the application is running.) Make a note of the **Largest Unused Block Value,** showing the amount of RAM available.

2.) In the Finder, select the **Ultimatte KnockOut** program icon and choose **Get Info** from the **File** menu.

3.) While in the *Ultimatte KnockOut* **Info** window, set the **Preferred Size** option to any value up to 90% of the **Largest Unused Block** value you noted in Step #1 above.

4.) Close the *Ultimatte KnockOut* **Info** window and launch the program whenever ready.

Customer Support and Feedback

We think that we've created quite a wonderful tool, but we were only able to do so because we've been working closely with artists throughout the *Ultimatte KnockOut* development process. We invite you to help us refine and improve it in the future. We'd appreciate your feedback and suggestions, problems and observations. As the product matures, we'll incorporate your requests to make *Ultimatte KnockOut* an even more exciting and useful product.

You can visit our Web site at **www.ultimatte.com** for a wealth of information about *Ultimatte KnockOut*, including product updates, hint and tips, etc. Please send your comments and inquiries to us via e-mail at **uko_support@ultimatte.com**

Technical Support

Technical Support is available via e-mail at **uko_support@ultimatte.com** , or via the telephone from 8:00AM to 4:30 PM Pacific Time at (818) 993-8139

Product Registration

Please register your copy of *Ultimatte KnockOut*. By doing so, you'll be kept advised of new versions of the product and special upgrade offers, and will become eligible for our technical support services. You can register the product by completing and mailing the enclosed postage-paid Registration Card or by registering online while using the installation program.

Getting Started

There are no edges. There are only transitions.

The reason that other masking techniques produce mediocre results is their failure to deal appropriately with the edge transitions that are characteristic of ALL photographed images. Both an alpha channel (mask) and a processed foreground, where the background colors have been completely removed, are required to produce realistic composites. *Ultimatte KnockOut* creates BOTH of these essential components ready for combining with a new background.

original

processed foreground

alpha channel

composite

Creating Selection Lines

Your job as a user is to define the subject you would like to mask out of the original image by drawing two sets of lines or selections. The first selection (**Inside Object**) should be drawn in the foreground subject as close to the transition area (see the Introduction on Page 1 for a description) as is necessary to pass through the colors that exist at the transition while taking care not to pass through any actual transition areas. Similarly, the second selection (**Outside Object**) should surround the foreground subject as close to the transition as is necessary to pass through the background colors that, as before, exist at the transition while avoiding any actual transition pixels. Note that a line of black and white crawling ants represents the currently active selection while inactive selection lines are gray and white.

image showing both inside and outside selection lines

The uniformity of the colors in the background and foreground areas determines how closely the lines must be drawn to the transition edge. For example, a white rabbit sitting in green grass would require only loosely drawn lines, while a leopard in a colorful jungle setting would require lines drawn much closer to the transition area. To reiterate an important principal to remember, which applies equally for drawing both the **Inside Object** and **Outside Object** selections: at no time should either boundary line ever touch any pixel within the transition area. When either **Inside Object** and **Outside Object** lines are drawn within the transition area the result is either a loss of the transition or inclusion of background color in the transition area.

Single Pixel Selections

Sometimes part of the object you are trying to preserve cannot be defined by using the **Inside Object** tool because the object, even though it is solid, is too thin to draw within. Or perhaps a transparent section separates it from the interior of the transition area. In cases like these you can select individual pixels which you would like to

preserve as 100% **Inside Object** selections by using the single pixel selector, accessed by holding down the **Control** key while using the **Inside Object** tool. You'll notice the cursor change into a pushpin. Note that single pixel selections can only be made when the zoom level is 100% or greater.

Similarly, if areas of background colors fall within the boundaries of the object itself (see the photo below of the stuffed dog), these areas can be selected as 100% **Outside Object** areas by using the **Outside Object** tool with the **Control** key depressed to take single pixel samples of the background. The cursor will change into a pair of tweezers. Single pixel selections can only be made at a zoom level of 100% or higher.

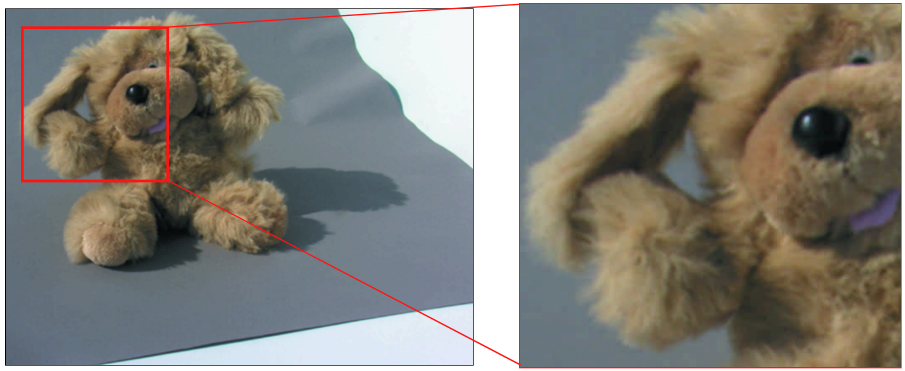


image showing background color falling within the boundaries of the Object

Selecting Shadows

Ultimatte KnockOut can also retain shadows that you might want to preserve along with the object. The **Inside Shadow** and **Outside Shadow** selection tools allow you to draw a separate set of selection lines that will preserve the shape and edge transition characteristics of a shadow, remove the underlying colors and textures and let you save the shadow selection as a separate *Adobe*® *Photoshop*® channel, allowing you to control its density and other attributes.

Preparing Your Images

File Formats

Ultimatte KnockOut will process images that are in 3-channel (RGB), single-layer *Adobe® Photoshop®* file formats. If your image uses another file format, open it in *Photoshop* and save it in *Photoshop* format before attempting to load it into *Ultimatte KnockOut.*

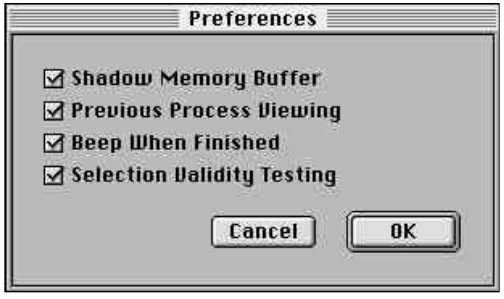
IMPORTANT: If your image has a pixel width dimension of greater than 4,000 pixels, it cannot be opened in *Ultimatte KnockOut.* Resize to a smaller pixel width.

Cropping

In order to minimize the memory requirements of the program and to speed up screen refresh and processing times, we recommend that you crop your image in *Photoshop* an appropriate amount to include as much of the image as necessary to display the entire object that you want to knock out.

Preferences Settings

The **Preferences Palette** is used to select various default settings for the program and can be accessed from the **Edit** menu. Here you can select the following:



1.) Shadow Memory Buffer

If you wish to preserve shadows using a separate alpha channel, check this box. If you are trying to conserve memory and want turn off shadow selections, make sure that this box is not checked. You will still be able to retain shadows using the **Inside** and **Outside Object** tools, but the program will output one combined alpha channel for the object and the shadow, and you will not be able to manipulate the shadow separately.

2.) Previous Process Viewing

If you have enough RAM allocated and would like to be able to compare the results of the current and the last previous processing of an image, check this box. After processing, you can toggle between the results of the old and new processing by pressing the **F2** key for the composite view, or **F3** for the alpha channel view. When unchecked, you will only be able to view the very last processing results.

3.) Beep When Finished

If you would like to be alerted with an audible beep when processing of an image is completed, enable this setting.

4.) Selection Validity Testing

Ultimatte KnockOut will test the selection lines you have drawn before processing to ensure that your **Inside Object** selection lines are entirely enclosed by your **Outside Object** selection lines. If you would like to disable this function, which improves the program's performance, uncheck this setting.

It is not necessary to re-start the program to make your **Preferences** active. Any window opened after you have changed the **Preferences** setting will employ the new settings. If your image or project window is already active, save it, close it and re-open it to activate the new **Preferences** settings.

Projects and Exporting

Opening an Image and Saving it as Project

After you launch *Ultimatte KnockOut*, a file requester will appear where you can select the image file that you want to open. Once you have opened an image and begin creating selections, we recommend that you save your work as a **Project.** This will save the image and the lines you have drawn. The software will add a .UKO (*Ultimatte KnockOut*) extension to the file name to indicate that it is a project file. However, you can use any file name and extension. *Ultimatte KnockOut* projects can only be opened by *Ultimatte KnockOut*.

Opening an Existing Project

Previously saved projects can be opened by using the **Open** option in the **File** menu. Your image with any previously drawn selections will be opened. A dialogue box will

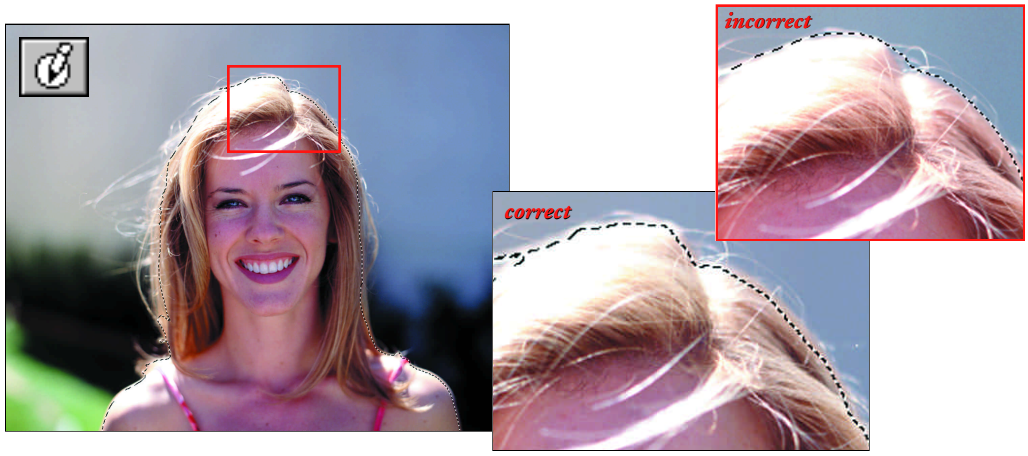
appear asking it you'd like to **Process** your image. If you accept by clicking on the **Process** button, *Ultimatte KnockOut* will **Process** your image using the selections you created before you saved the project.

Exporting Images

We recommend that you save you work in the form of a project. This will save all of the selection lines that you have drawn. The **Export** selection in the **File** menu will save the processed foreground as either a 4 (RGB plus Alpha channel) or 5-channel (RGB plus Alpha plus Shadow Alpha) *Photoshop* file.

Making and Modifying Selections

Creating the Inside Object Selection



Using the **Inside Object** tool on the tool palette, begin by making an enclosed selection that loosely traces along the inner boundaries of the object's edge transitions. Once you have created this loose definition of the inner boundaries, you can refine your selection by adding to it or subtracting from it, usually while zooming in an appropriate amount.

The **Inside Object** selection line should be drawn as close to the transition as is needed to pass through the color that is the same as the color that actually enters the transition. An object of uniform color only needs a very loose **Inside Object** selection. Multicolored objects (e.g., a plaid shirt) would require a much closer line. Care must be taken that when drawing near an edge that at no time are transition pixels touched. If transition pixels are drawn through inadvertently, the result will be those pixels, and nearby pixels having the same RGB value, becoming solid in the knocked

out transition. Whatever color in the sampled transition that is contributed by the background will remain in the incorrectly solid transition area. The line will need to be redrawn outside the transition in the opaque part of the subject.

Adding to the Inside Object Selection

You can add to the existing **Inside Object** selection by using the **Inside Object** tool with the **Shift** key held down. The selection that results will contain all of the pixels in the original selection plus those contained in the new selection. If instead of drawing in freehand mode you would like to constrain the tool to straight lines while adding to your selection, depress the **Control** and **Shift** keys while using the tool.

Subtracting from the Inside Object Selections

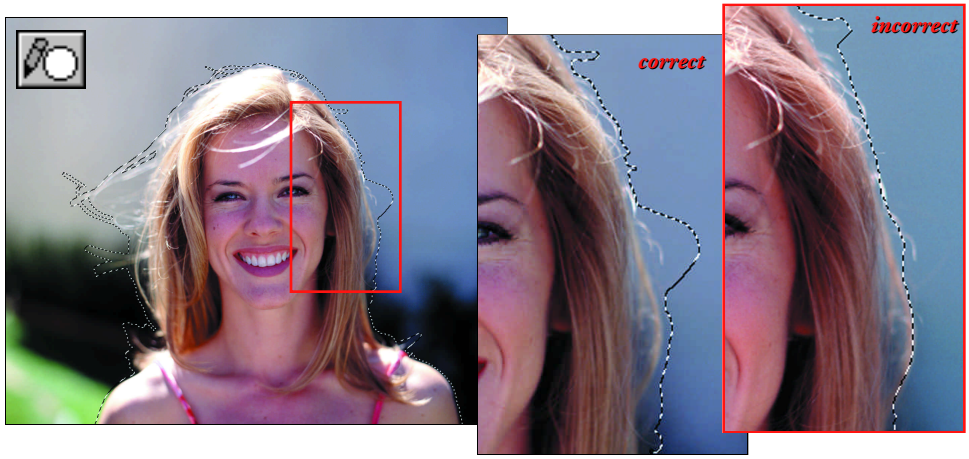
You can subtract from the **Inside Object** selection by using the **Inside Object** tool with the **Option** key held down. The selection that results will contain all of the original selection minus those pixels contained in new selection. If instead of drawing in freehand mode you would like to constrain the tool to straight lines while deleting from your selection, depress the **Control** and **Option** keys while using the tool.

Making Single Pixel Inside Selections

It is sometimes helpful to select individual pixels which fall outside of the main **Inside Object** selection area in order to provide the program with the color values it needs to preserve object details. With the **Inside Object** tool selected, hold down the **Control** key (the pointer will become a pushpin)  while clicking on a pixel which contains the color that should be processed as 100% foreground object. A selection line will encircle the chosen pixel. Note that single pixel selections can only be made when the zoom level is 100% or greater.

This feature can be useful when glints on hair detail are lost, but you should only use the pushpin in opaque areas. If the glint contains even one pixel that is opaque and it is selected it will correct the problem. Likewise is true for any detail that is lost where opaque pixels can be selected.

Creating the Outside Object Selection



It is important that you keep in mind a couple of concepts when creating your **Outside Object** selections:

1.) Draw your lines as close to the outer border of the object's transition area as is necessary to trace over the colors that make up the exterior component of the transition.

2.) Your **Outside Object** selection must completely enclose the **Inside Object** selection in order for the program to determine where the transitions lie.

Adding to the Outside Object Selection

You can add to the existing **Outside Object** selection by using the **Outside Object** tool with the **Shift** key held down. The selection that results will contain all of the original selection plus those contained in the new selection. If instead of drawing in freehand mode you would like to constrain the **Outside Object** tool to straight lines while adding to your selection, depress the **Control** and **Shift** keys while using the tool.

Subtracting from the Outside Object Selection

You can subtract from the **Outside Object** selection by using the **Outside Object** tool with the **Option** key held down. The selection that results will contain all of the orig-

inal selection minus those pixels contained in new selection. If instead of drawing in freehand mode you would like to constrain the tool to straight lines while subtracting from your selection, depress the **Control** and **Option** keys while using the tool.

When creating the outside selection, remember to be careful not to draw in the transitions. When an **Outside Object** line is drawn through a transition the result is a loss of the transition in the knocked out image.

Using the Auto Outside Function

If you expect your **Outside Object** selection to be relatively similar in shape to the **Inside Object** selection, and your inner selection is drawn close to the transition area, then you may want to use the **Auto Outside** function found in the **Selections** menu after you have drawn the inner lines. When you select **Auto Outside** it will use the existing **Inside Object** selection to create a new line or set of lines which will completely enclose the inside selection. This new set of lines will be spaced an appropriate distance from your **Inside Object** selection based upon the resolution of the image. You can expand the distance between the **Inside Object** line and the automatically created outer line by using **command**] on the keyboard, or contract the distance by using **command** [. These expand and contract functions can also be accessed from the **Selections** menu. Once you've let the program generate the outer line, you can then use the **Outside Object** tool to modify and reposition the line as necessary.

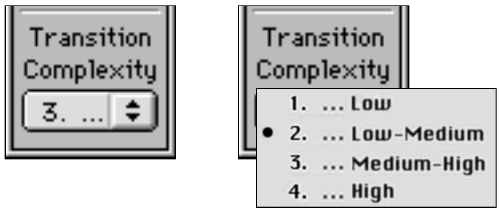
Note: If you choose to draw the **Outside Object** line first, the **Auto** function will generate the **Inside Object** selection for you automatically. If both lines are already drawn, the selection that is currently active will be the one that will increase/decrease, overwriting the inside or outside selection.

Making Single Pixel Outside Selections

It is sometimes helpful to select individual pixels which are not part of the main outer selection area in order to provide the program with the color values it needs to preserve object details. As an example, sometimes the background is still visible through loose flyaway hair. If 100% background pixels can be found amongst the detail that are not obscured by any foreground transition then selection of these pixels will cause them and any other nearby similar background pixels to be properly subtracted. With the **Outside Object** tool selected, hold down the **Control** key (the pointer will become a pair of tweezers)  while clicking on a pixel which should be processed as 100% background. A selection line will encircle the chosen pixel. Note that sin-

gle pixel selections can only be made when the zoom level is 100% or greater. Experimentation with this technique under various circumstances will quickly allow the user to build an intuitive feel for when and where to take these samples.

Selecting the Transition Complexity Setting



The **Transition Complexity** settings have an important effect on the way your images are processed. They are provided so that you can instruct the program about the nature of the transition area. There are four settings available that can have a rather profound effect on how the program processes the information that you have provided it by drawing the **Inside Object** and **Outside Object** selections. These are:

1.) **Low**
2.) **Low to Medium**
3.) **Medium to High**
4.) **High.**

Deciding which setting is best for any particular image depends upon the complexity of the transition area, i.e., the area between the inner and outer selection lines that you draw. We suggest that you read the descriptions and examples below and try processing the same image with different **Transition Complexity** settings while noting the results.

1.) **Low** - Use for images with uniform colors in both the foreground and the background. Images with low noise levels, minimal detail and narrow transition widths can be processed with this setting.
Example: A white stuffed animal on a uniform background.

2.) **Low to Medium** - Use for images with more complex foregrounds but with relatively simple backgrounds. The foreground object can have more detail and more

variable colors in the transition area. Wider edge transitions are acceptable. The background remains even and consistent.
Examples: Studio portraits. People (with hair) against a uniform background. In focus shots of most subjects against uniform backgrounds.

3.) **Medium to High** - Use for images where the foreground is relatively simple and the background is complex and/or grainy. This setting can handle wider transitions, soft blurs, out-of focus edges and motion blurs in the foreground.
Examples: A drinking glass against a uniform background. A plain, brown teddy bear on a plaid background.

4.) **High** - Use for images where both the foreground and background have a great amount of detail along the transition. The best setting for transition edges where both the inner and outer lines are drawn close to the edge transition.
Examples: A single person to be extracted from a crowd scene. A leopard in a field of flowers.

A good indicator of which **Transition Complexity** setting you should use is the proximity of the lines you have drawn near the edge transition area. Remember that the lines you draw must cross through the colors that make up the beginning of the transition. So, in a case where colors remain consistent from deep inside an object all the way to the beginning of the edge transition, a loosely drawn **Inside Object** line will suffice. This indicates that the foreground object is of low complexity. The same applies to the **Outside Object** lines. If you were forced to draw them close to the transition area because of the number of colors, details or noise in the background area, then the background is considered to be complex. If the background is relatively consistent, lines can be drawn more loosely because the background is less complex.

Other factors can affect which **Transition Complexity** setting will give you the best result. For example, noisy scans can contaminate otherwise even and consistent colors and require higher complexity settings.

Processing Images

After you have drawn your **Inside Object** and **Outside Object** selections, and have chosen the correct **Transition Complexity** setting, it is time to process the image and evaluate the results. Select **Process** from the file menu and *Ultimatte KnockOut* will

process the image, creating an alpha channel and a new image consisting of the processed foreground object with all of the background colors removed.

Viewing the Results After Processing

After the processing is completed, you can use the **View** pull-down menus or the function keys to see three different views of the results:

F1 displays the original image.
F2 displays the knocked out image over the chosen underlay color.
F3 displays the alpha channel

Selection Validity Testing

If you have **Selection Validity Testing** enabled in the **Preferences** palette and attempt to process an image where your **Outside Object** selection does not completely encompass your **Inside Object** selection, the program will refuse to process the image. Instead, it will generate a red rectangle surrounding the section of your selection lines showing you where the error has taken place. In order to continue, you will have to re-draw your selections lines so that your **Outside Object** selection DOES enclose you **Inside Object** selection.

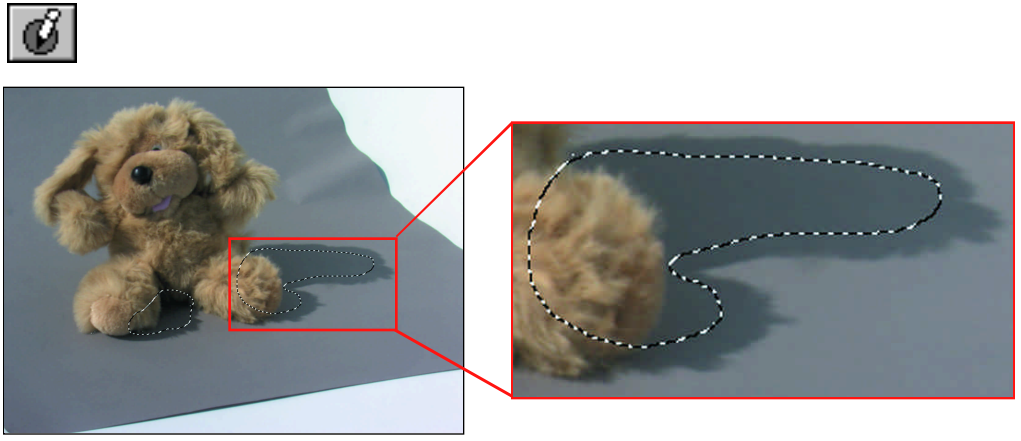
You can check your selection lines for errors at any time before processing by choosing **Check Selection Validity** from the **Edit** menu.

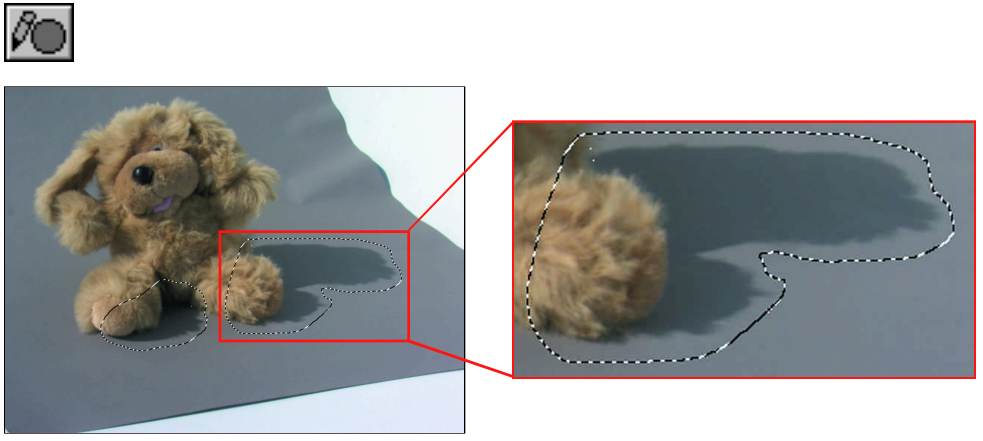
Evaluating the Results and Reprocessing

After you have processed the image and examined the results, you can either save the extracted image and associated alpha channel(s) by using the **Export** command, or you can return to the original image and refine the inner and outer selections before processing again to achieve better results. Wherever edge anomalies are found it will be necessary to redraw the boundaries. You might have to go through the process of making your **Inside Object** and **Outside Object** selections and evaluating the results a few times before you achieve acceptable results. If you have enabled **Previous Process Viewing** in the **Preferences** settings, the last, previous result of processing will be available for comparison against the latest processing results. These views can be toggled using the **F2** key for the knocked out image over the chosen underlay color or the **F3** key for the alpha channel.

Selecting Shadows

Shadows are retained using the same procedures used for selecting the object itself as described above. Three separate tools, **Inside Shadow**, **Outside Shadow** and **Shadow Edge Feather**, are used to make the necessary selections. Shadows cast by the subject onto any surface, regardless of texture or color, will be retained and reproduced as a separate alpha channel. Avoid drawing the **Inside Shadow** and **Outside Shadow** selections through any pixels that fall within the shadow transition. Wherever the shadow touches the object, draw the outside selection through it as if the shadow was a separate subject. *Ultimatte KnockOut* will create a fifth channel for the shadow alpha that contains the shadow information when you **Process** the image.





Using the Syringe Tools

Inside Syringe Tool

Whether or not detail such as hair will be retained and reproduced properly depends on the inner selection passing through colors that are the same as the nearby detail in the transition area. You might notice after processing your image that hair has either thinned out too much or has disappeared. When the detail that is missing is partially transparent and there are no opaque pixels that can be found as in the foreground selection description, then its time to use the syringe tools. If partially transparent hair detail is missing, then hair color from an area not affected by the background color and matching the best estimate of the color of the hair that's missing can be “withdrawn” from one area of the image and "injected" into the problem area using the syringe tools. Inject as many samples as is needed to produce a proper transparency.

IMPORTANT: The syringe tool is used to inject colors into transparent areas only.

The **Inside Syringe** tool is used to select a foreground color for injection into transparencies that are too thin or missing after initial processing. The color to be injected should be selected from colors like those in the missing transparency except not contaminated by any background color. Clicking on the color swatch next to the **Inside Syringe** tool brings up the system color picker from which you can select estimated colors.

1.) Click on the **Inside Syringe Tool** on the **Tool** palette

2.) While holding down the **Command** key, click on a pixel in the image that contains the color you want to withdraw from a solid area (not from the problem area or any transparency area).

(or)

Click on the color swatch to the right of the tool that will bring up the *Macintosh® System Color Picker* from which a color can be selected.

3.) The color swatch to the right of the tool will change to the selected color.

4.) Release the **Command** key and click on pixels in the problem area to "inject" the selected color. (Note that syringe selections are only visible when the zoom

level is 100% or greater.)

This process can be repeated as many times and with as many colors as necessary to correct any problems.

To select a new color for a new area requiring correction, press the **Command** key to select a new color. Any pixels that you inject during a new sequence will create another group of injected pixels.

Groups of pixels injected with the **Inside Syringe** tool can be made active by holding down the **Command** and **Option** keys with the **Inside Syringe** tool selected and then clicking directly on one of the injected pixels in a group. This will make all of the injected pixels in that group active. Once you have activated a group of injected pixels, you can use the **Delete** key to remove them from your image.

Outside Syringe Tool

This tool works in much the same way as the **Inside Syringe** tool except that it is used to select a background color for injection into transparent areas where background color contamination still persists after initial processing. Use this tool to sample color either from the image or the color picker that would be in the background if not obscured by the foreground object. Clicking on the color swatch next to the **Outside Syringe** tool brings up the system color picker from which you can select estimated colors.

1.) Click on the **Outside Syringe** tool on the **Tool** palette

2.) While holding down the **command** key, click on a pixel in the image that contains the color you want to withdraw.

(or)

Click on the color swatch to the right of the tool that will bring up the *Macintosh® System Color Picker* from which a color can be selected.

3.) The color swatch to the right of the tool will change to the selected color.

4.) Release the **Command** key and click the mouse to inject into the problem area

with the desired color.

(Note that syringe selections are only visible when the zoom level is 100% or greater.)

This process can be repeated as many times and with as many colors as necessary to correct problems.

To select a new color for a new area requiring correction, press the **Command** key to select a new color. Any pixels that you inject during a new sequence will create another group of injected pixels.

Groups of pixels injected with the **Outside Syringe** tool can be made active by holding down the **Command** and **Option** keys with the **Outside Syringe** tool selected and then clicking directly on one of the injected pixels in a group. This will make all of the injected pixels in that group active. Once you have activated a group of injected pixels, you can use the **Delete** key to remove them from your image.

The Edge Feather Tool

Sometimes portions of the foreground and background are identical and only through visual extrapolation can we surmise where the transition ought to be. The foreground and background colors can be so similar that the transition area cannot be easily identified. For example, if your subject is a polar bear in the snow, there might be areas where it is impossible to see a definable edge transition, even when you do a very tight zoom. In these cases, it will be necessary for you to create an edge transition by making your best guess as to where the boundaries lie between the foreground and background.

The **Edge Feather** tool is provided so that you can create these non-visible edge transitions yourself. To do this, use the **Inside Object** and **Outside Object** selection tools to draw selections where you wish to create a transition. The **Edge Feather** tool will fill the area between the inner and outer selection lines with a smooth, transparent gradient.

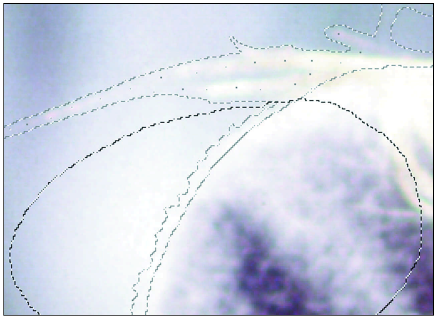
After the **Inside Object** and **Outside Object** selection lines have been drawn, use the

Edge Feather tool to draw an enclosed selection around the problem. This selection should contain the sections of the inner and outer selection lines where you want to create an edge transition.

When you **Process** the image, *Ultimatte KnockOut* will create an edge transition that smoothly feathers the area between the inner and outer selection lines. You may use the **Edge Feather** tool as many times as necessary in the same image.

no visible edge

zoomed view of image processed without the edge feather tool



zoomed view of edge feather area defined

final result

A separate **Shadow Edge Feather** tool is provided for creating feathered edges in shadow selections.

Processing Images

After you have drawn your **Inside Object** and **Outside Object** selections, it is time to process the image and evaluate the results. Select **Process** from the **File** menu and *Ultimatte KnockOut* will process the image, creating an alpha channel and a new image consisting of the knocked out image against the chosen underlay color with all of the background colors removed.

Selection Validity Testing

If you have enabled **Selection Validity Testing** in the Preferences palette and you attempt to process an image where your **Outside Object** selection does not completely encompass your **Inside Object** selection, the program will refuse to process the image. Instead, it will generate a red rectangle surrounding the section of your selection lines showing you where the error has taken place. In order to continue, you will have to re-draw your selections lines so that your **Outside Object** selection DOES enclose your **Inside Object** selection.

You can check your selection lines for errors before processing by choosing **Check Selection Validity** from the **Edit** menu.

Viewing the Results After Processing

After the processing is completed, you can use the function keys or the **View** pull-down menu to see three different views of the results:

F1 displays the original image.
F2 displays the knocked out image over the chosen underlay color.
F3 displays the alpha channel

Evaluating the Results and Reprocessing

After you have processed the image and examined the results, you can either save the knocked out image and associated alpha channel(s) by using the **Export** command, or you can return to the original image and refine the **Inside Object** and **Outside Object** selections before processing again to achieve better results. Wherever edge anomalies are found it will be necessary to redraw the boundaries. You might have to go through the process of making your inner and outer selections and evaluating the results a few times before you achieve acceptable results.

If you have enabled **Previous Process Viewing** in the **Preferences** settings, the program will keep two sets of selection lines and processing results in memory at the same time: the most recent set and the previous set. You can toggle between these two using the **F2** key (or the **F3** key if you wish to view the alpha channels) and choose to continue refining the selection lines on either of them. If you decide that the results of the older processing are better than those of the latest processing, you can use the earlier set of selections and continue working on them. Just remember that when you **Process** again that you will lose the oldest set of selection lines that you have worked on and their corresponding processing results.

Exporting Your Results

Ultimatte KnockOut will save processed images as a 4-channel *Adobe® Photoshop®* file (or a 5-channel *Photoshop* file if the shadow tools were used.) By retaining a shadow alpha in addition to the object alpha you will be able to further manipulate your shadow in *Photoshop,* such as changing the density or colorimetry of the shadow only, without affecting the object.

Working with Ultimatte KnockOut files in Adobe® Photoshop®

There are many different ways to work with layers and selections in *Photoshop.* Here we will describe two ways in which you can import and use the results from *Ultimatte KnockOut* in *Photoshop.*

To Composite the Processed Foreground against a new Background Image:

1.) Launch *Photoshop* and begin by opening both images with which you will be working: the background image with which you wish to composite and the processed foreground created by *Ultimatte KnockOut.*
2.) With the processed foreground image active, use *Photoshop's* **Channels** palette to display the RGB channels of the processed foreground. Load the object alpha channel as a selection and the marching ants will appear.
3.) Copy the selection.
4.) Select the background image into which you will be placing the knocked out image and select **Paste.**
5.) Go to the layer menu and choose **Layer/Matting/Remo ve Black Matte.**

IMPORTANT: You must remove the black matte in order to carry out an additive mix which will allow for the proper blending of the processed foreground with the new background.

The object which you "Knocked Out" is now a new layer in the target image and can be manipulated as you see fit.

Shadow Selections

If you saved your work as a 5-channel image file, the shadow alpha channel will be created separately from subject alpha channel. Continue from above with the following steps to include it in the final composite:

6.) With the processed foreground selected, copy the shadow alpha **channel** into a new **channel** in your background image.
7.) With the layer directly beneath the object you knocked out selected, load the shadow alpha channel.
8.) While writing on this layer, choose **New Adjustment Layer** from the **Layers** palette pull-down menu. The **Levels** dialogue box will appear and you can set the output levels of the channel to achieve the desired level of gray in the shadow.
8.) Ensure that shadow layer is under (behind) the foreground layer.
9.) Use the move tool to place the shadow in the desired position.

The shadow that you "Knocked Out" is now a new layer in the target image and can be manipulated as you see fit.

To manipulate the foreground selection in the original image:

This process is useful for selecting specific image areas, to apply filters or effects or making other adjustments:

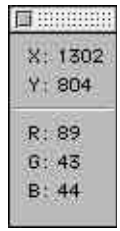
1.) Launch *Photoshop* and begin by opening two images: the original image and the image that you have processed in *Ultimatte KnockOut.*
2.) Copy the alpha channel of the processed foreground into a new **channel** in the original image.
3.) Click on the RGB channel to make the RGB channels visible.
4.) Load the alpha channel selection.
5.) Manipulate the selection as you wish and save.

Note that when manipulating a selection in the manner just described, it is not necessary to remove the black matte since there is no compositing being performed.

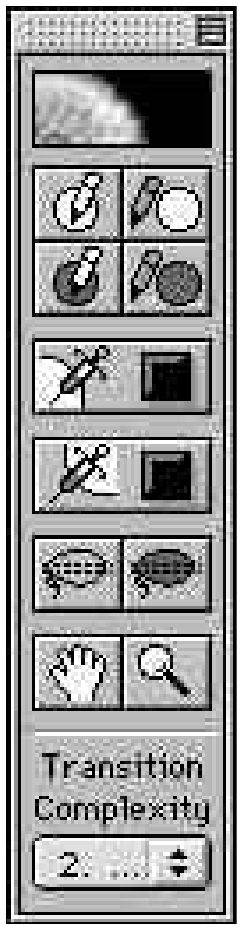
The Palettes

Selections Palette

Info Palette



Tools Palette



Inside Object Tool

Outside Object Tool

Inside Shadow Tool

Outside Shadow Tool

Inside Syringe Tool

Outside Syringe Tool

Edge Feather Tool

Shadow Edge Feather Tool

Pan Tool

Zoom Tool

Transition Complexity Setting

Underlay Color Palette

The Tools Palette

Inside Object Tool

- Use to draw the lines that define the interior colors at the transition area of the foreground object.
- Use with the **Shift** key depressed to add to the **Inside Object** selection.
- Use with the **Control** key depressed to add a single pixel to the selection (cursor will change to a push-pin)
- Use with the **Option** key depressed to subtract from the **Inside Object** selection.
- Use with both the **Control** and **Shift** keys depressed to constrain the tool to straight lines while adding to your selection.
- Use with both the **Control** and **Option** keys depressed to constrain the tool to straight lines while deleting from your selection.

See Pages 6-7 for additional information.

Outside Object Tool

- Use to draw the lines that define the color in the background at the transition area of the foreground object.
- Use with the **Shift** key depressed to add to the **Outside Object** selection.
- Use with the **Option** key depressed to subtract from the **Outside Object** selection.
- Use with the **Control** key depressed to subtract a single pixel from the selection. (cursor will change to a pair of tweezers)
- Use with both the **Control** and **Shift** keys depressed to constrain the tool to straight lines while adding to your selection.
- Use with both the **Control** and **Option** keys depressed to constrain the tool to straight lines while deleting from your selection.

See Pages 6-7 for additional information.

Inside Shadow Tool

- Use to draw the lines that define the interior of the transition area within a shadow to be retained.
- Use with the **Shift** key depressed to add to the **Inside Shadow** selection.
- Use with the **Control** key depressed to add a single pixel to the selection (cursor will change to a push-pin)
- Use with the **Option** key depressed to subtract from the **Inside Shadow** selection.
- Use with both the **Control** and **Shift** keys depressed to constrain the tool to straight lines while adding to your selection.
- Use with both the **Control** and **Option** keys depressed to constrain the tool to straight lines while deleting from your selection.

See Pages 7 and 43-44 for additional information.

Outside Shadow Tool

- Use to draw the lines that define the outside of the edge area surrounding the shadow.
- Use with the **Shift** key depressed to add to the **Outside Shadow** selection.
- Use with the **Option** key depressed to subtract from the **Outside Shadow** shadow selection.
- Use with the **Control** key depressed to subtract a single pixel from the selection (cursor will change to a pair of tweezers)
- Use with both **Control** and **Shift** depressed to constrain the tool to straight lines while adding to your selection.
- Use with both **Control** and **Option** depressed to constrain the tool to straight lines while deleting from your selection.

See Pages 7 and 43-44 for additional information.

Inside Syringe Tool

This tool is used for transition areas where it is not possible to sample the appropriate foreground color using the **Inside Object** tool. Use this tool with the **Command** key depressed to withdraw a color that is representative of the foreground color in the transition you would like to preserve. Release the **Command** key to inject the color into the appropriate area.
See Pages 19-20 for additional information.

Outside Syringe Tool

This tool is used for transition areas where it is not possible to sample the appropriate foreground color using the **Outside Object** tool. Use this tool with the **Command** key depressed to withdraw a color that is representative of the background color in the transition you would like to preserve. Release the **Command** key to inject the color into the appropriate area.
See Pages 20-21 for additional information.

Edge Feather Tool

Use the **Edge Feather** tool to create edge transitions in areas where the foreground and background colors are so similar that the transition area cannot be easily identified. Encircling an area containing **Inside Object** and **Outside Object** selection lines with this tool will create a soft gradation between the selection lines.
See Pages 21-22 for additional information.

Shadow Edge Feather Tool

Use the **Shadow Edge Feather** tool to create edge transitions where the foreground and background colors are so similar that the transition area cannot be easily identified. Encircling an area containing **Inside Shadow** and **Outside Shadow** selection lines with this tool will create a soft gradation of shadow between the selection lines.

The Pan Tool

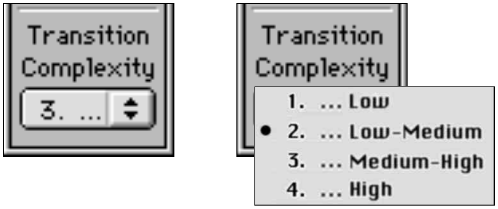
Select the **Pan** tool from the **Tools** palette to pan the image around inside the display window. You can access the **Pan** tool temporarily without changing from your current selection tool by holding down the spacebar on the keyboard.

The Zoom Tool

Use the **Zoom** tool to zoom in and out in the image display window. Click on the magnifying glass icon, then click in the image area you want to magnify. Hold down the **Option** key while clicking on the image to zoom out.

You can also access the **Zoom** tool temporarily without changing from the current object selection tool by holding down the **Command** key and the **Spacebar** at the same time. Similarly, you can zoom out by holding down the **Option** key and **Spacebar** simultaneously. You can also use **Command** + to zoom in or **Command** - to zoom out.

Transition Complexity



The **Transition Complexity** settings have an important effect on how an image is processed. They are provided so that you can instruct the program about the nature of the transition area. There are four settings available that can have a rather profound effect on how the program processes the information that you have provided it by drawing your selections. These are:

1.) **Low**
2.) **Low to Medium**
3.) **Medium to High**
4.) **High**

Deciding which setting is best for any particular image depends upon the complexity of the transition area, i.e., the area between the **Inside Object** and **Outside Object** selections that you draw. We suggest that you read the descriptions and examples below and try processing the same image with different **Transition Complexity** settings while noting the results.

1.) **Low** - Use for images with uniform, simple colors in both the foreground and the background. Images with low noise levels, minimal detail and narrow transition widths can be processed with this setting.
Example: A white stuffed animal on a single-color background.

2.) **Low to Medium** - Use for images with more complex foregrounds but with relatively simple backgrounds. The foreground object can have more detail and more variable colors in the transition area. Wider edge transitions are acceptable. The background remains even and consistent.
Examples: Studio portraits. People (with hair) against a uniform background. In-focus shots of most subjects against even backgrounds.

3.) **Medium to High** - Use for images where the foreground is relatively simple and the background is complex and/or grainy. This setting can handle wider transitions,

soft blurs, out-of focus edges and motion blurs in the foreground.
Examples: A drinking glass against a solid-color background. A plain, brown teddy bear on a plaid background.

4.) **High** - Use for images where both the foreground and background contain a great amount of detail along the transition. The best setting for transition edges where both the inner and outer lines are drawn close to the edge transition.
Examples: A single person to be extracted from a crowd scene. A leopard in a field of flowers.

A good indicator of which **Transition Complexity** setting you should use is the proximity of the lines you have drawn near the edge transition area. Remember that the lines you draw must cross through the colors that make up the beginning of the transition. So, in a case where colors remain consistent from deep inside an object all the way to the beginning of the edge transition, a loosely drawn **Inside Object** line will suffice. This indicates that the foreground object is of low complexity. The same applies to the **Outside Object** lines. If you were forced to draw them close to the transition area because of the number of colors, details or noise in the background area, then the background is considered to be complex. If the background is relatively consistent, lines can be drawn more loosely because the background is less complex.

Other factors can affect which **Transition Complexity** setting will give you the best result. For example, noisy scans can contaminate otherwise even and consistent colors and require higher complexity settings.

The Selections Palette

Use the **Selections** palette to hide or display any or all of the selection lines you have drawn. Click on the eyeball next to the desired selection to turn its display on or off. As an alternative, you may also hide or display any of the selection lines by using the choices presented in the **Selections** menu. You can also use **Command H** to hide or show all selections simultaneously. The **Selections** palette is accessed from the **Windows** menu.

The Info Palette

X,Y

Displays the X and Y coordinate values for the pixel under the cursor.

RGB

Displays the Red, Green and Blue (RGB) values for the pixel under the cursor.

The **Info** palette is accessed from the **Windows** menu.

The Underlay Color Palette

After you have processed an image you can use the **F2** function key (or choose **Knocked Out** from the **View** menu) to display the processed foreground against a color to get an idea of how it will appear against the colors in your final composite. The **Underlay Color** palette lets you select which color will be used with the **F2** key. You can select any of the fifteen available colors by clicking on the color swatches in the palette. The **Underlay Color** palette is accessed from the **Windows** menu. Note that these colors are displayed for preview purposes only and will have no effect on the processed foreground that is output when you export the image.

Menus Selections and Keyboard Shortcuts

The **Caps Lock** key can be used at any time to turn the mouse cursor into crosshairs.

The File Menu

Open (Command O) - Opens either a previously saved project or a new image file
Close (Command W) - Closes the current display window.

Save Project (Command S) - Saves your project file, including the lines you have drawn. Projects are saved using a proprietary file format for *Ultimatte KnockOut* with the file extension .UKO.
Save Project As... - Allows you to save a project file with a new name. Projects are saved using a proprietary file format for *Ultimatte KnockOut* with the file extension .UKO.

Export (Command E) - Exports the processed foreground and alpha channel(s) as an *Adobe Photoshop* file with a _PFG.PSD (processed foreground) extension.
Quit (Command Q)- Quits the program.

The Edit Menu

Undo (Command Z) - Undoes the last selection.
Process (Command P) - Processes the image, creates the alpha channel and composites the results against the chosen underlay color.

The Tools Menu

You can move from tool to tool within the **Tool** palette by using the numeric keypad on the keyboard (the **4** and **6** keys). The menu versions are provided as an added convenience.

Inside Object - Used for selecting the inside of the object transition area.
Outside Object - Used for selecting the outside of the object transition area.

Inside Shadow - Used for selecting the inside of the shadow transition area.
Outside Shadow - Used for selecting the outside of the shadow transition area.

Inside Syringe - Use this tool to withdraw a color or colors from the image or the color picker that you would expect to see and inject it into the problem area.
Outside Syringe - Use this tool to withdraw the color or colors either from the image or color picker that you assume would to be in the background if the foreground object was not in the shot.

Edge Feather - Use this tool to define areas between the **Inside Object** and **Outside Object** selection lines where you would like to create a feathered edge transition.
Shadow Edge Feather - Use this tool to define areas between the **Inside Shadow** and **Outside Shadow** selections where you would like to create a feathered edge transition.

Pan (Spacebar) - Allows you to pan around the image inside the display window.
Zoom (Command +) (Command -) - Zooms in or out of the image once if the **Zoom** tool is selected
(**Command Spacebar**) and (**Command Option Spacebar**) - Activates the **Zoom** tool and zooms in or out of the image.

The Selections Menu

None (Command D) - Deletes all the selections created using the currently selected tool.
Select All - Selects all of the image using the currently selected tool.
Invert - Inverts the active selection.

Hide All/ Show All (Command H) - Hides/Shows all selection lines.

Hide/Show Inside Object - Hides/Shows the **Inside Object** selection(s).
Hide/Show Outside Object - Hides/Shows the **Outside Object** selection(s).

Hide/Show Inside Shadow - Hides/Shows the **Inside Shadow** selection(s).
Hide/Show Outside Shadow - Hides/Shows the **Outside Object** selection(s).

Hide/Show Inside Syringe - Hides/Shows the **Inside Syringe** selections.

Hide/Show Outside Syringe - Hides/Shows the **Outside Syringe** selections.

Hide/Show Edge Feather - Hides/Shows the **Edge Feather** selections.
Hide/Show Shadow Edge Feather - Hides/Shows the **Shadow Edge Feather** selections.

Auto Inside/Outside - Automatically generates a "best guess" selection based upon a previously drawn one. If you draw the **Inside Object** selection first, it will use it to generate an **Outside Object** selection. If you draw the **Outside Object** selection first, it will use it to generate an **Inside Object** selection

Expand (Command]) - Will expand the currently active selection by one pixel for every push of the right bracket key.
Contract (Command [ ) - Will contract the currently active selection by one pixel for every push of the left bracket key.

The View Menu

Original (F1) - Displays the original image.
Knocked Out (F2) - Displays a composite with the chosen underlay color.
Alpha (F3) - Displays the alpha channel.

The Windows Menu

Hide/Show Tools (Tab) - Toggles the **Tool** palette off and on.
Hide/Show Info - Toggles the **Info** palette off and on.
Hide/Show Underlay - Toggles the **Underlay Color** palette off and on.
Hide/Show Selections - Toggles the **Selections** palette off and on.

Zoom In (Command +) - Zooms in on the image.
Zoom Out (Command -) - Zooms out from the image.

Fit Window (Command 0) - Forces the image into the dimension of the display window.
100% View (Command Option 0) - Displays the actual pixel resolution (unzoomed view) of the image.

Tutorials

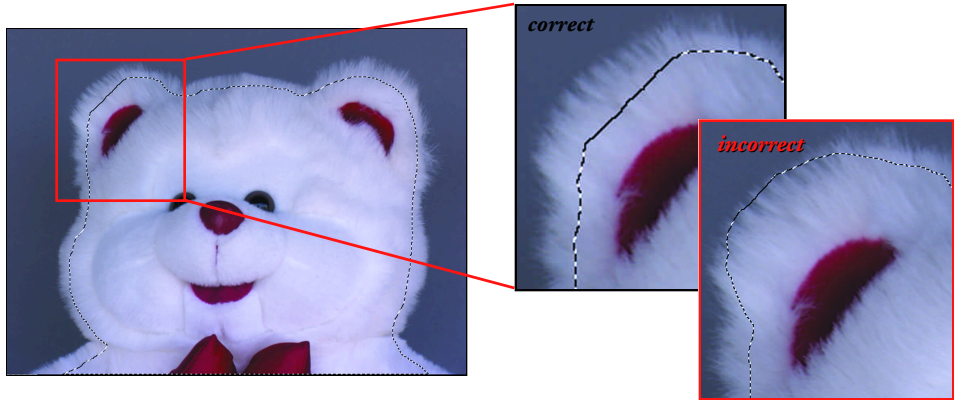
Tutorial #1

Creating Inside Object and Outside Object Selections on a simple image

1.) Open the image entitled ***Bear*** from the *Ultimatte KnockOut* CD.

2.) Using the **Inside Object** tool,

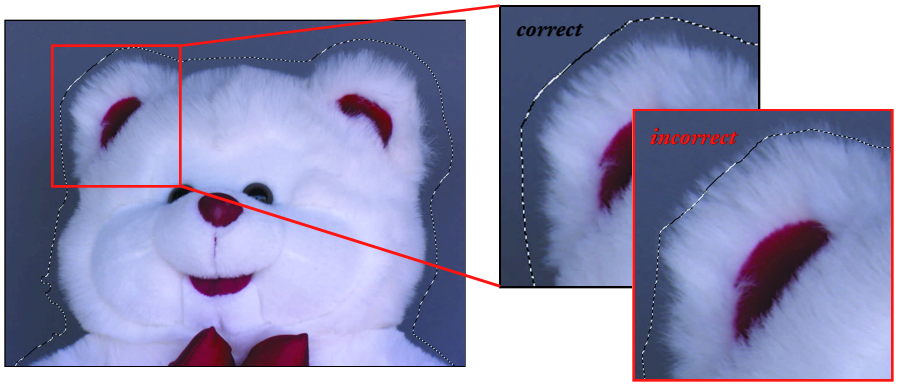
create a selection line that traces along the interior of the bear, without entering into the transition area. Use the **Shift** key to add to your selection, and the **Option** key to subtract from your selection until the line looks similar to the one shown below.



3.) Use the **Outside Object**

tool and create a selection line around the outside the edges of the bear's fuzzy coat.

4.) Edit the outside selection until it looks similar to the one in the screen shot. Use the **Shift** key to add to your selection, and the **Option** key to subtract from your selection.



5.) Set the transition complexity on the tool palette to 1 (Low).

6.) Select **Process** from the **Edit** menu (or use **Command P**) to process the image.

7.) If necessary, modify the **Inside Object** and **Outside Object** lines and reprocess the image.

8.) Name and save your project using **Save Project As...** from the **File** menu.

9.) Use **Export** from the **File** menu to save the processed foreground and the alpha channel and follow the instructions on Pages 24-25 to work with the image in *Adobe® Photoshop®.*

An *Ultimatte KnockOut* project called ***Bear.UKO*** is also included if you would like to compare your project with a completed one.

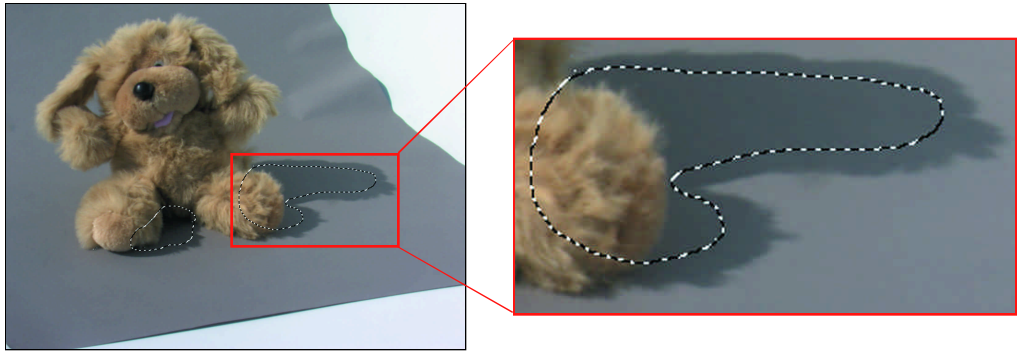
Tutorial # 2
Preserving Shadows

1.) Open the project called ***shadow.UKO*** from the *Ultimatte KnockOut*CD. Use the **Preferences** palette from the **Edit** menu and make sure that the **Shadow Memory Buffer** is enabled. Note that the **Inside Object** and **Outside Object** selections have already been created for you and that **Transition Complexity** is set to **2**.

2.) Click on the eyeballs in the **Selections** palette to hide the display of the **Inside Object** and **Outside Object** selection lines

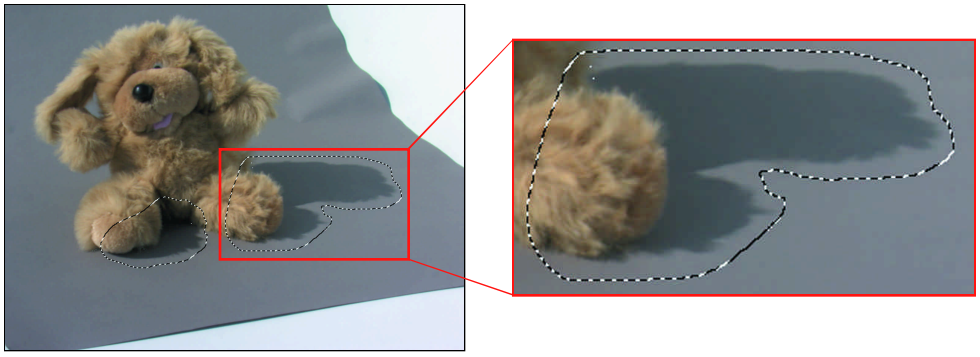
3.) Using the **Inside Shadow** tool,

create a selection around the inside of the shadow while being careful not to draw your line in the transition area along the outside edge of the shadow. Use the **Shift** and **Option** keys to add or subtract from the **Inside Shadow** selection as necessary. In the area where the shadow touches the edges of the toy dog, your selection should extend into the toy itself.



4.) Using the **Outside Shadow** tool,

draw a selection around the area outside of the shadow. Use the **Shift** and **Option** keys to add or subtract from the **Outside Shadow** selection as necessary. As before, in the area where the shadow touches the edges of the toy dog, your outside selection should extend into the dog itself.

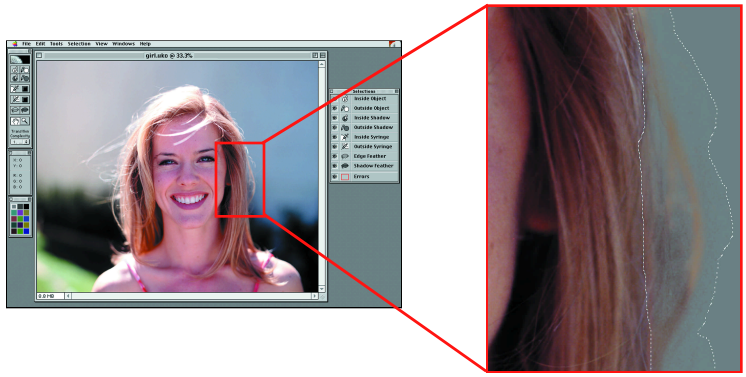


5.) Process your image using **Command P** and examine the results. Use the **F1**, **F2** and **F3** keys to see the original image, the knocked out image against an underlay color and the alpha channel, respectively. You can change the underlay color by clicking on any of the colors in the **Underlay Color** palette.

6.) Use **Export** from the **File** menu to save the processed foreground and the alpha channel and follow the instructions on Pages 24-25 to work with the image in *Adobe® Photoshop®*.

Tutorial #3
Using the Syringe Tools

1.) Open the project entitled ***syringe.UKO*** from the *Ultimatte KnockOut* CD. A requester will appear, asking if you would like to process the image. Accept by clicking on the **Process** button in the requester. We have already created the **Inside Object** and **Outside Object** selections and correctly set the **Transition Complexity** to **3**.



2.) Use the **F1** key to view the original.

3.) Use the **Zoom** tool to magnify the right side of the image. Remember that syringe selections are only visible when the zoom level is 100% or greater. Using the **F1** and **F2** keys to examine the processed image, you'll notice that some areas of the model's hair in the transition have become too transparent. This is because our inner line is as close to the transition as possible without entering the transition and is not able to pass through the colors which are in those strands of hair. The hair in the transition is a different color than those through which the inner line passes. Don't use the single pixel **Pushpin** tool in this area because that would make the hair 100% opaque and we wish to preserve the transparency. We can repair this by using the **Syringe** tools.

4.) Select the **Inside Syringe** tool from the **Tool** palette.

While holding down the **Command** key, click on a representative light brown color in the area of the woman's hair shown in Figure 3.1 and click the mouse

to withdraw a color that represents the color we would see in the problematic hair area if the background color were not contaminating the transparency colors. Notice the color swatch update to the color you have chosen.

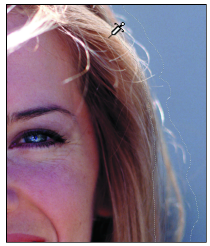


figure 3.1

5.) Release the **Command** key, and inject several points on the section of problem hair. This will inject the color into the thinned-out hairs as shown in Figure 3.2.

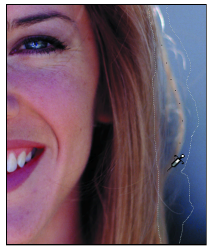


figure 3.2

6.) (optional) If you would like to see the result of this operation before we continue and make another syringe injection, **Process** the image now (**Command P**), then use the **F1** and **F2** keys to compare the original image to the results obtained through the use of the **Syringe** tool.

7.) Notice that another area of bright, backlit wisps of hair shown in Figure 3.3 is still too transparent. Again using the **Inside Syringe** tool and **Command** key, withdraw a color from the bright, highlighted wisp of hair that falls in front of the model's forehead (see Figure 3.3). Release the **Command** key and inject a couple of points into the second problem area that should have similar, nearly-white highlights (as in Figure 3.4).

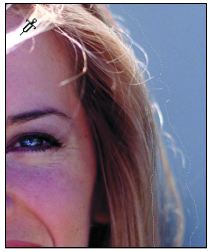


figure 3.3

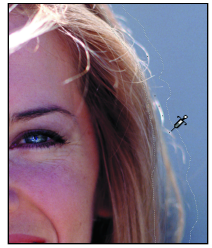


figure 3.4

8.) Process the image using the menu selection or **Command P**.

9.) Your results will be much improved, with natural-looking hair and accurate highlights.

10.) Use **Export** from the **File** menu to save the processed foreground and the alpha channel and follow the instructions on Pages 24-25 to work with the image in *Adobe® Photoshop®*.

An *Ultimatte KnockOut* project called ***syringe_completed.UKO*** is also included if you would like to compare your syringe project with one where the syringe selections have been made for you.

Tutorial #4
Using the Edge Feather Tool

1.) Open the project called ***edgefeather.UKO*** from the *Ultimatte KnockOut* CD. A requester will appear, asking if you would like to process the image. Accept by clicking on the **Process** button in the requester. Note that the **Inside Object**, **Outside Object** and **Syringe** selections have already been created for you and that **Transition Complexity** has been set to **3**.

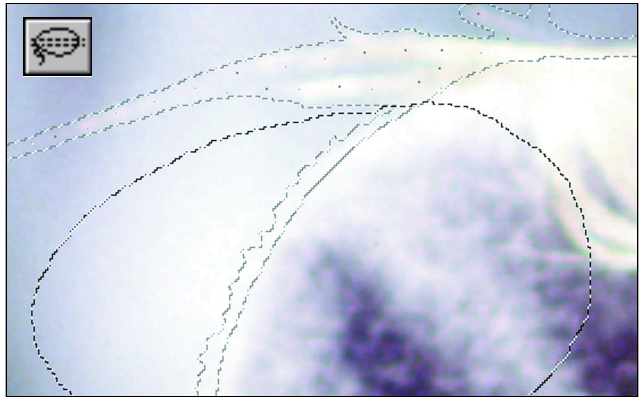
2.) Use the **F1** key to view the original. Observe the area near the lower left-hand corner of the image just below the top of the model's shoulder. The back-lit edge of her fluffy sweater merges with the background colors in such a way as to make it impossible to see any color difference between the sweater and the background.

zoomed view of area with no visible transition

3.) Use the **F2** key to look at the knocked out subject against an underlay color and you will discover that this area does not knock out properly -- the edge looks ragged and unrealistic. The **Edge Feather** tool is provided for situations just like this.

*unacceptable result after processing without the **Edge Feather** tool*

4.) To repair this problem, create an enclosed selection using the **Edge Feather** tool that encircles the area. The selection should contain the sections of the **Inside Object** and **Outside Object** selection lines where you want to create an edge transition where none exists. The **Edge Feather** tool will create a smooth, transparent transition between the **Inside Object** and **Outside Object** selection lines. You can determine the width and shape of the feathered edge by varying the shapes of your selection lines and their distance apart. In this case, we drew the inner and outer selection lines for you and based their distance from one another and their shapes upon the width of the "naturally occurring" transition that can been seen in other areas of the sweater's edge.



*selection created with the **Edge Feather** tool surrounding **Inside Object** and **Outside Object** selections*

5.) **Process** the image (**Command P**) and see how the program has created a smooth transition between the **Inside Object** and **Outside Object** selection lines in the area you defined with the **Edge Feather** tool.

6.) Use **Export** from the **File** menu to save the processed foreground and the alpha channel and follow the instructions on Pages 24-25 to work with the image in *Adobe® Photoshop®*.

Hints and Tips

- When in doubt, draw your lines closer to the transition area!
- Noisy scans and film grain can cause a faint, ghosty, halo effect in the transition area. Once composited, this effect usually becomes unnoticeable, depending upon the background against which it is placed. If necessary, you can minimize this halo effect by drawing your outside object lines closer to the transition area.
- When working with your image, it is often very helpful to use the **Selections** palette to turn different selection tool displays on and off to avoid clutter on the screen.
- The **Selections** palette can be used to turn off inside and outside selections to help differentiate between single pixel (**Pushpin** or **Tweezer**) selections and syringe selections.
- When trying to decide whether to use the **Inside Syringe** or **Outside Syringe** tools, first try the tool for which you can make the best estimate of the color to be withdrawn.
- Transparent objects can often be almost totally transition area. A water glass, for example, might only require a few single pixel, **Inside Object** selections in areas with highlights.
- Don't forget to select the correct **Transition Complexity** setting before processing your image. When in doubt, try a couple of different settings and compare the results.
- With complex images, it is sometimes more efficient to do a little touchup work to the alpha channel and/or processed foreground in Photoshop than to try to create a perfect knock out every time with *Ultimatte KnockOut*.

- It is important to zoom in far enough so that you can actually identify the edge transitions. Make sure that you can see the prevailing outside colors(s), the transition and the prevailing inside color(s).

- After processing, toggle back and forth several times between the original image and the knocked out image using the **F1** and **F2** keys to get a good view of how processing has affected the transition areas. Similarly, if you have enough RAM and have the **View Previous Process** function activated, toggle between your cur rent and previous process to get a better idea of how changes to your selections have affected your results.

- Using *Ultimatte KnockOut* is an art. Artistic decisions are often required to determine whether an area is part of the object or part of the background or whether an area is partially transparent or opaque.

- It is not possible in this document to describe every kind of transition that can exist. Careful experimentation and experience using the program will help you develop an intuitive feel for how to handle transitions and where to draw you selection lines.

- It is usually easiest to draw "quick-and-dirty," loose selection lines at a zoom ratio where the entire object to be knocked out can be seen, and then zoom in more tightly to add or subtract from the selection lines.

- Don't forget to use the **Auto Inside/Outside** function to create one set of selection lines for you. This function works best on images where the **Inside Object** and **Outside Object** selections will have a similar overall shape.

- The **Edge Feather** tool can solve seemingly impossible problems. Instead of spending an inordinate amount of time trying to preserve a section of an image that is complex and difficult to mask out properly, just create your own transition using the **Edge Feather** tool. (Once again, your artistic sensibilities will be called into play.)

- VERY IMPORTANT: Don't forget to use the **Remove Black Matte** function in *Photoshop* when compositing your results (see Page 25 for more complete instructions).

- Single pixel selections for **Inside Object** or **Outside Object** selections should be used only on areas that are 100% opaque. In partially transparent, transition areas, use the syringe tools.

Photography and Scanning Techniques

In the studio, any backdrop that has no fine detail in focus should work well. Avoid close color and brightness matches between the backdrop and the edges of the foreground object, particularly hair, to be knocked out. Grain in the film, if bad enough, can produce a grainy ghost effect in the backdrop area. Always try to use the slowest, fine grain film as possible to minimize the phenomena. Avoid over exposure of either the backdrop or the subject, particularly near transition areas. When over exposure occurs the result is typically color tints in the edge transitions. Colored edges can also be caused by lens chromatic aberrations. The solution for this problem is to choose a lens with a minimum amount of aberrations.

Colored edge transitions can also be inadvertently generated when the image is scanned. Whether the scan is 8, 10, or 16 bits, verify that there is no clipping of any detail in the blacks or whites. Do not do any kind of secondary or area isolated color correction on the image before using *Ultimatte KnockOut.* Always color correct after using *Ultimatte KnockOut.*

When shooting out of the studio and the backdrop is a natural setting, keep in mind that the easier it is to see the hair detail through the view finder the easier it will be to knock it out later. Narrow depth of field is very helpful in this regard so a long focal length lens is advisable where possible. A fast shutter speed requiring a low f-stop is another good way to help separate the subject from a busy background. Sometimes by simply having the subject or the camera move a few inches left or right, up or down, important fine detail can be positioned against the background to achieve a more favorable visual separation which will knock out more efficiently later.

Always try to place smooth, even surfaces behind glass and smoke if at all possible. This will allow for a very effective knock out of these never-before-possible foreground subjects.

There is one phenomena to try to avoid. It is important to bring this up for two reasons. First, if the photograph has already been taken and you're trying to deal with the problem, it's important to know the limitations. Secondly, if you have any control over the photography the problem can be avoided very easily. The phenomena occurs when someone with black or nearly black hair is shot against a plain gray backdrop. The highlights in the hair will show a full gamut of gray scale that will have the same exact gray that exists in the backdrop. Because many of these highlights will be found in the area defined as transition, those highlights that have the same, or nearly the same, shade of gray as the backdrop will become transparent just as if it were backdrop. When composited against a new background image that is similar to, or lighter than, the original backdrop the loss of highlights is little noticed. When the new background image is noticeably darker than the original backdrop, then the loss of highlights in the affected area leaves the hair appearing flat. The closer the new background image is to the actual hair color the more problematic it becomes because the highlights are what would normally visibly differentiate between the dark hair and the dark background.

At the time of photography the solution is to not use gray for the backdrop. Use a backdrop that has some actual color. Pastels will work best in this scenario. If a highly saturated backdrop is chosen, there is no concern of producing edge effects or reduction of fine detail when scanned properly and used with *Ultimatte KnockOut.* However, you should beware of lens flare that may be introduced resulting in the contamination from the backdrop color onto the overall image. If this is the case, some color correction may be necessary after the subject has been Knocked Out and during the compositing process.

Index

100% View	39
Adobe Photoshop	8, 24
Allocating RAM	3
Alpha Channel	5, 10
Alpha View	17, 23, 39
Application Memory Size	2
Auto Inside/Outside Function	14, 39, 52
Beep When Finished	9
Close	37
Color Swatch	19, 20
Compositing in Photoshop	24-25
Constrain	12, 13
Contract Selection	14, 39
Control Key	7, 12, 13, 14, 29
Cropping	8
Customer Support	3
Edge Feather Tool	21-22, 30, 38, 48-49, 52
Edit Menu	37
Evaluating Results	17, 23
Expand Selection	14, 39
Export	24, 37
Exporting Images	10, 24
F1 Key	17, 23, 39, 52
F2 Key	9, 17, 23, 24, 39, 52
F3 Key	9, 17, 23, 24, 39
Feedback	3
File Formats	8
File Menu	37
Fit Window	39

Get Info	3
Hardware Key	2
Hide All/Show All	38
Hide/Show Edge Feather	38
Hide/Show Info	39
Hide/Show Inside Object	38
Hide/Show Inside Shadow	38
Hide/Show Inside Syringe	38
Hide/Show Outside Object	38
Hide/Show Outside Shadow	38
Hide/Show Outside Syringe	38
Hide/Show Selections	39
Hide/Show Shadow Edge Feather	38
Hide/Show Tools	39
Hide/Show Underlay	39
Image Preparation	8
Info Palette	34
Inside Object Tool	6- 7, 11,16, 23, 28, 33, 37, 41-42
Inside Shadow Tool	7, 29, 38
Inside Syringe Tool	19, 20, 30, 38, 45, 46, 51
Installation	2
Invert	38
Knocked Out View	17, 23, 39
Open	37
Opening Images	9
Opening Projects	9
Option Key	1, 12, 2, 28, 29, 31
Original View	39
Outside Object Tool	6-7, 13-15, 16, 23, 28, 33, 38
Outside Shadow Tool	7, 29, 38
Outside Syringe Tool	20, 30, 38, 51
Pan Tool	31, 38
Pixel Selections	6
Preferences	8-9
Previous Process Viewing	9, 17, 24
Process	10, 16, 18, 22, 37
Processed Foreground	5
Processing Images	16, 23
Product Registration	4
Pushpin	7, 12, 28, 45

Quit	37
RAM Allocation	3
Registration	4
Remove Black Matte	25, 52
Reprocessing	17
RGB	34
Save Project	37
Save Project As	37
Security Key	2
Select All	38
Select None	38
Selecting Shadows	7, 18
Selection Lines	6
Selection Menu	38
Selection Palette	34, 51
Selection Validity Testing	9, 17, 23
Shadow Edge Feather Tool	3, 18, 22, 31, 38
Shadow Memory Buffer	8
Shadow Selections in Photoshop	25
Shadows	7, 18, 43-44
Shift Key	12, 13, 28, 29
Single Pixel Selections	6, 7, 12, 14, 28, 45
System Color Picker	19
System Requirements	2
Technical Support	3
Tools Menu	37
Tools Palette	27
Transition Complexity Settings	15, 16, 32, 51
Transitions	1-2, 5, 6, 32
Tweezers	14, 28
UKO	9
Underlay Color Palette	35
Undo	37
View Menu	35, 39
View Previous Process	52
Viewing Results	17, 23
Web Site	3
Windows Menu	34, 35, 39
X,Y	34
Zoom Tool	31, 38, 39

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