Varis PhotoMedia Tutorials

Welcome

This tutorial has been prepared for the photographer who is striving to learn digital imaging. I make an effort to supply current information about digital imaging techniques and general information about computer technology that is pertinent for today's professional photographer. This information is based on my personal experience down in the trenches at the front lines of the digital revolution that is sweeping the photographic industry.

One thing is certain: all of the information contained herein will be obsolete in a fairly short time - how short, I can't say. Be forewarned that things are changing very rapidly and the only way to stay competitive is to keep learning. I devote a good percentage of my time learning new things and I am attempting to share what I learn with you but this information will go out of date so you should be flexible and not take this tutorial to be the ultimate statement on the subject.

I maintain a web site where I post additional information, examples and tutorials. You are invited to browse various portfolios as well as download free material and purchase additional tutorials at:

http://www.varis.com

I hope you find the information contained in this tutorial helpful. Please let me know if you find any errors or ommissions - I'm always trying to improve these materials! You may contatct me via email at:

varis@varis.com

best regards, Lee Varis 2003

The Fine Art of Compositing

Most people think of trick image composites when they think of Photoshop and for good reason! Photoshop has a superb collection of masking tools that allow for very complex seamless image composites. This tutorial examines the process of placing a subject into a new background in detail. Not only will we look at the extract feature and layer masking but we will show how to develop the complete image – adjusting lighting and adding little details, like drop shadows that make the images go together in a convincing way. We will work with layers and layer masks, vector masks, alpha channels, extract, liquify, smudge tool, special brushes, clouds filter and adjustment layers to create comprehensive techniques for masking, drop shadows and lighting effects. Each image composite represents unique challenges– hope-fully, this example will point the way to a more inspired application of various techniques for image composites.

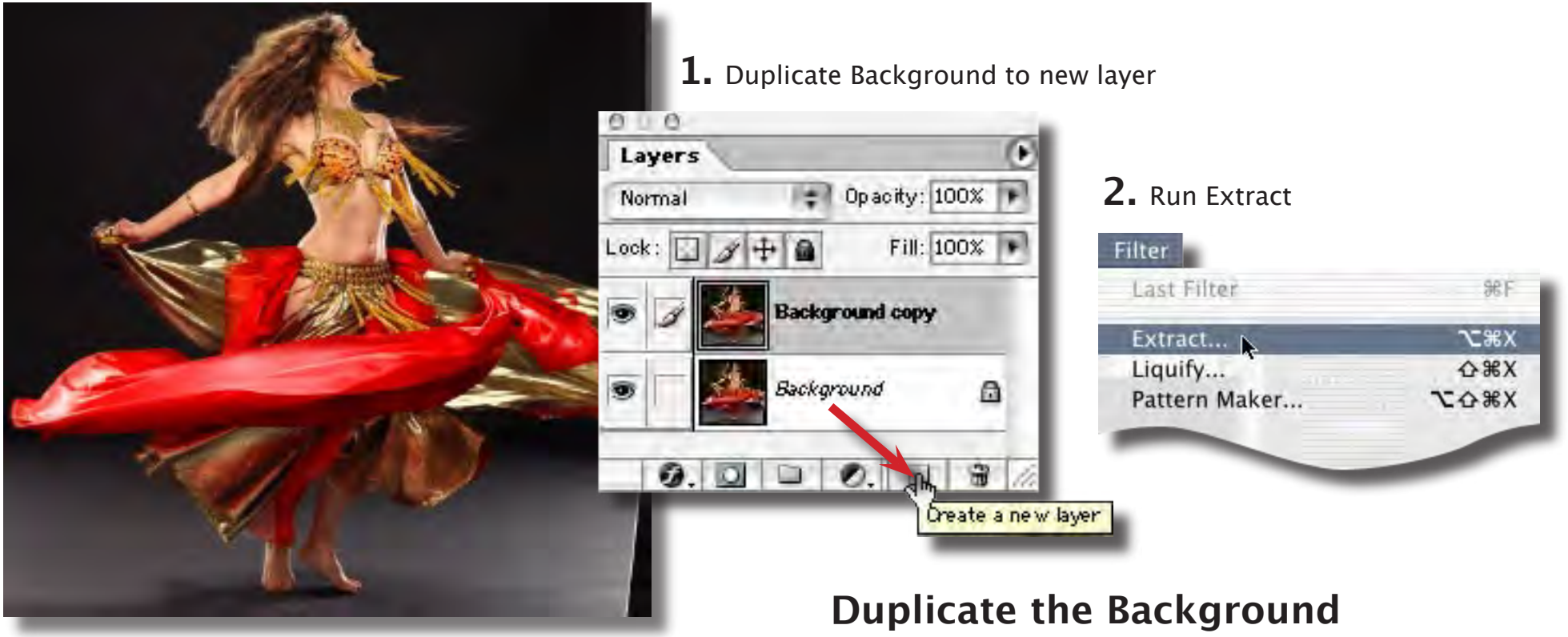
This

Plus This

to Create This

You can download the images for this tutorial by clicking the link below. The images are hi-res Jpegs in a Stuffit Binhex archive. To decompress the archive you will need the free Stuffit-Expander.

Tutorial Images



Duplicate the Background

Extract is used for subjects with complex edges that are not shot on blue or green screen. The fly-away hair of our dancer is a good example of the type of subject we'd use Extract for. Extract can not be run on a Background layer so before we do anything else we need to create a layer that can have transparency.

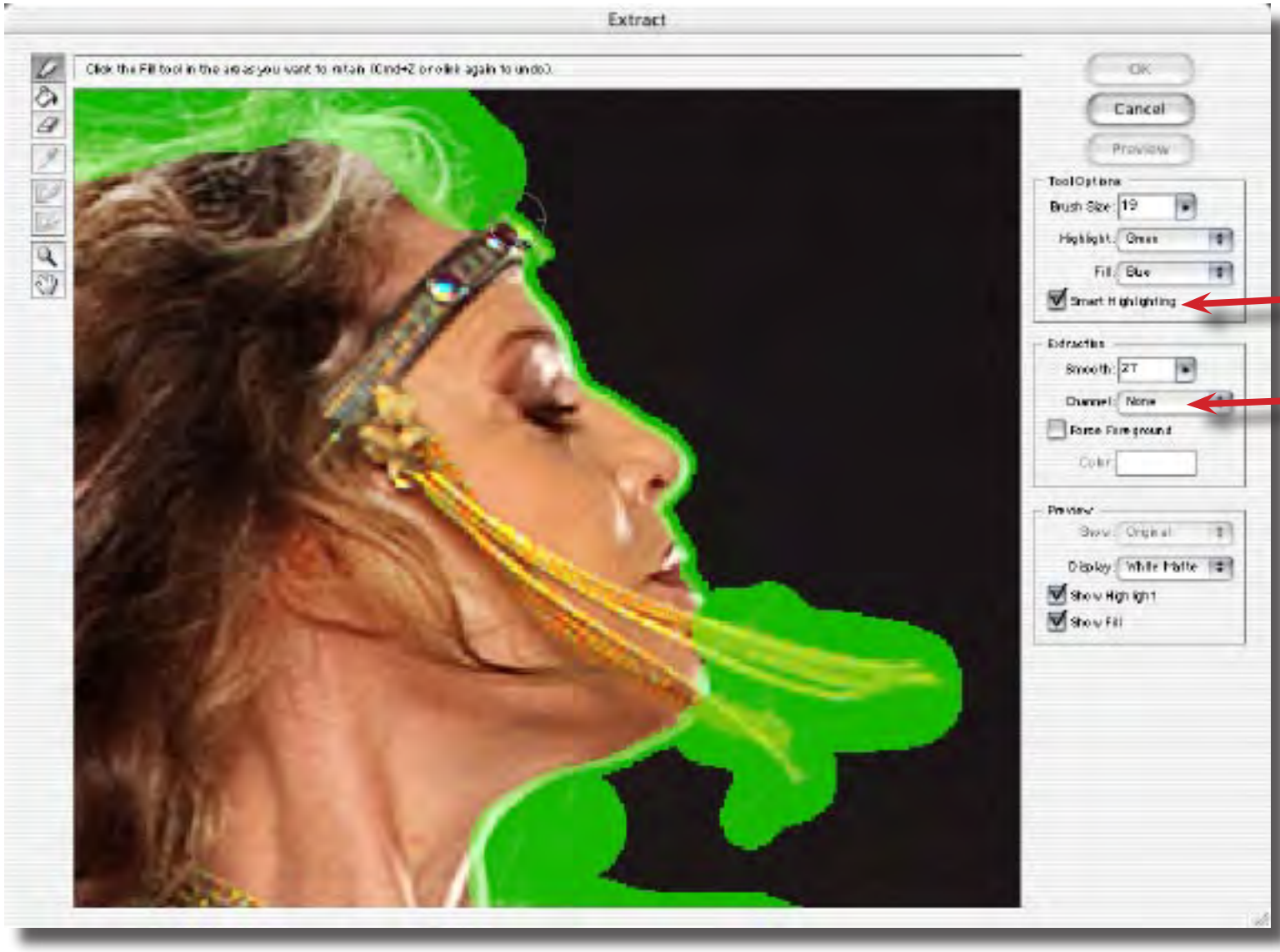
There are a couple of ways to do this. We could double click the background layer - this brings up a dialog that allows us to rename the background layer and automatically transforms it into a "layer" that can have transparency (you can erase to transparent - "the background" erases to the background color). For the security of possible revisions its usually best to simply duplicate the background - we'll see another reason for this later. Drag the Background layer onto the new layer icon in the Layers palette to create a duplicate layer.

Now that we have a new duplicate layer we select: Filter-> Extract...

The Extract Dialog

Once you are in the Extract dialog all available tools and controls are in this one window. The basic idea is to draw a highlight around the edge of the object that you'd like to extract from its background. Pick the edge highlighter tool from the upper left corner and paint the edge of you subject - make sure you cover all edges and use a big enough brush to cover complex edge transitions like the fly-away hair. You can change the color of the edge highlight so that it contrasts nicely with the subject (you might not want to use green for plants & leaves). Normal keyboard commands for brush size and navigation tools will work in this dialog so use them. Some big strokes around the hair you can do zoomed out but most of the work should done by zooming in tighter to see more edge detail.

Highlight the edges

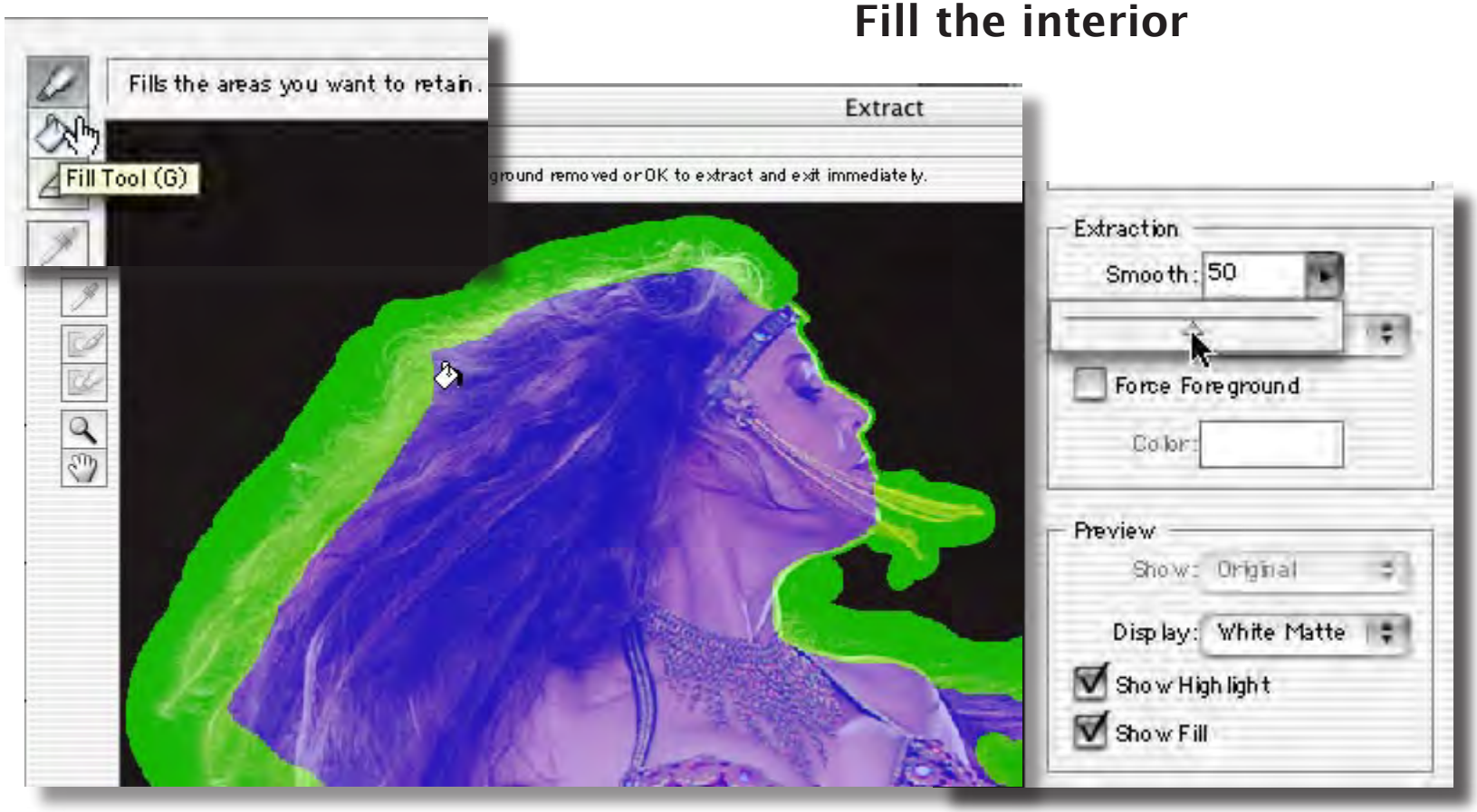


Check “Smart Highlighting” for sharp hard edges.

Sometimes you can speed up the creation of edge highlights by basing the highlights on selections saved in an alpha channel. For instance, you can make a crude selection of the background with the magic wand, save the selection as a alpha channel then enter the extract dialog and set the Channel drop down to the saved alpha. The subject will automatically be highlighted and you can then refine the highlight by erasing the interior (black areas in the alpha channel become highlighted). As soon as you refine the edge the Channel menu will change to “Custom”.

Carefully work your way around the edge of the subject. You are defining the area in the image where Photoshop is going to look for edge transitions. Everything that is highlighted should contain possible transitions from inside the subject to outside the subject. For obvious hard edges we would do well to minimize the area of the highlight and narrow the focus for the edge searching algorithms. Checking “Smart Highlighting” creates a “gun site” cursor that pre-focuses the edge. Its best to completely cover fly-aways with the highlight color. Use the eraser to trim excess highlight areas.

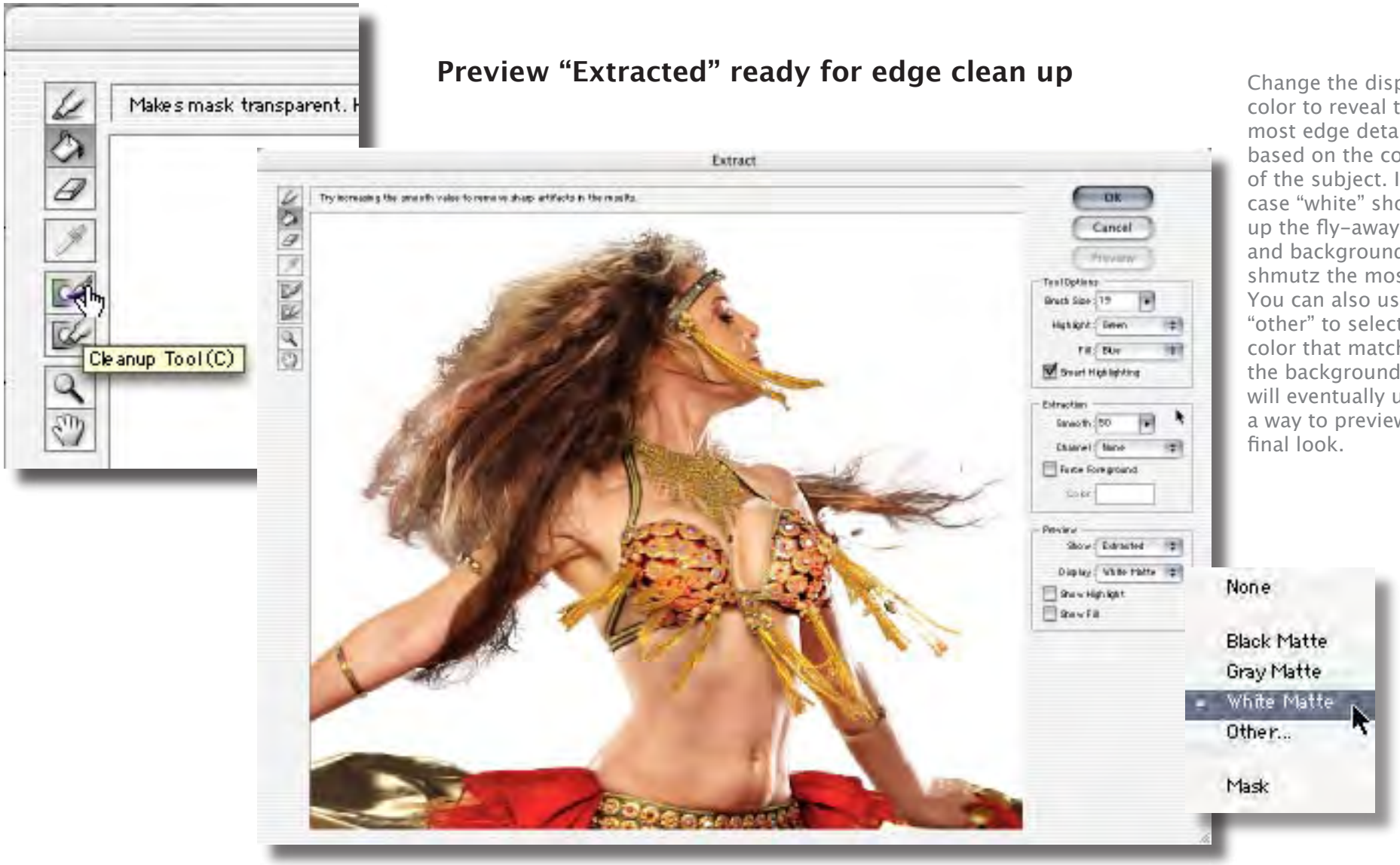
Fill the interior



I usually set the smooth level to "50" as a starting point before selecting Preview - a lower number will give you a harder, more contrasty edge - a higher number will give you a softer, more transparent edge but the effect is somewhat unpredictable so I start right in the middle. Most of the time this is fine and you can then refine the edge with the touchup tools. Occasionally you have to re-do the edge highlight. Select Show "Original", uncheck "Show Fill" and edit the highlight, re-do the fill and click preview again.

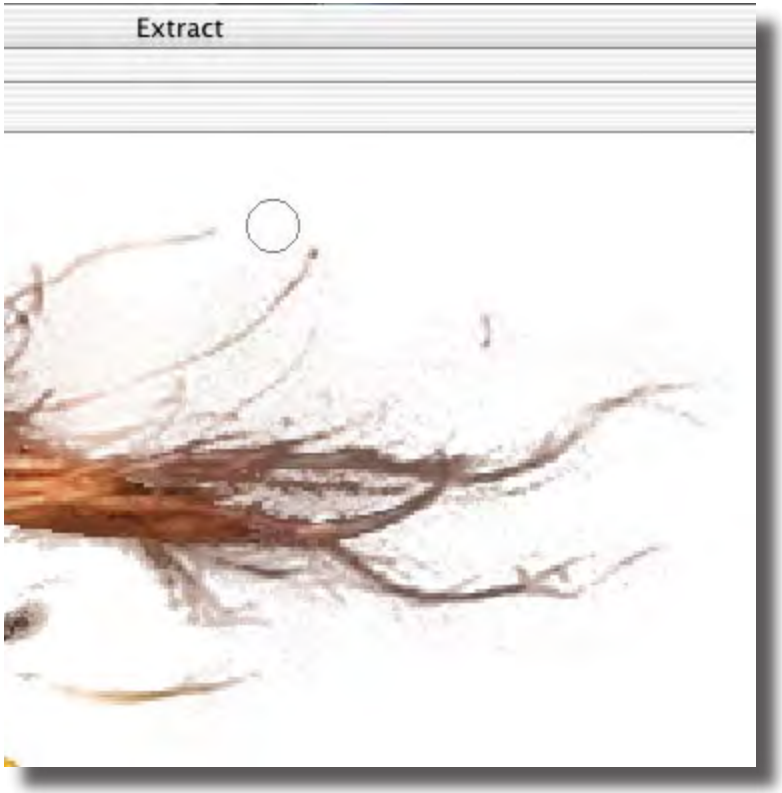
Once you have finished highlighting the edge of the subject you need to tell Photoshop what is inside and what is outside the edge. Use the paint bucket "Fill" tool to click inside the subject and define the inside. If the fill color extends into the background it means that you have a hole in your edge! You have to find the gap and fix it - zoom in to suspect areas and search for small gaps in the edge. If the subject has a lot of holes in it that show through to the background or if the majority of the subject's interior is somewhat transparent like smoke or a colored liquid splash, etc... You should cover the subject completely with the highlight color and check the "force foreground" checkbox. You then use the eye dropper tool (it only becomes available when you check this option) to select the foreground color. This works pretty well for subjects of a mostly uniform color - in the case of smoke or fire, sample the color from the most opaque area and let the extract calculation define the transparent areas. After you have your inside and outside defined you can select the Preview button.

Preview “Extracted” ready for edge clean up



Change the display color to reveal the most edge detail based on the colors of the subject. In this case “white” shows up the fly-away hair and background shmutz the most. You can also use “other” to select a color that matches the background you will eventually use as a way to preview the final look.

Usually the extract calculation is not perfect. When we “Preview” the extraction we have the opportunity to fix up rough edges or mis-takes in the mask using the edge refining tools. We start with the “Cleanup Tool” which is used to erase bits of background that show up or add back parts of the subject that are missing. Use the number keys 1-9 for 10%-90% opacity, 0 for 100% - hold down option/Alt to paint back subject.

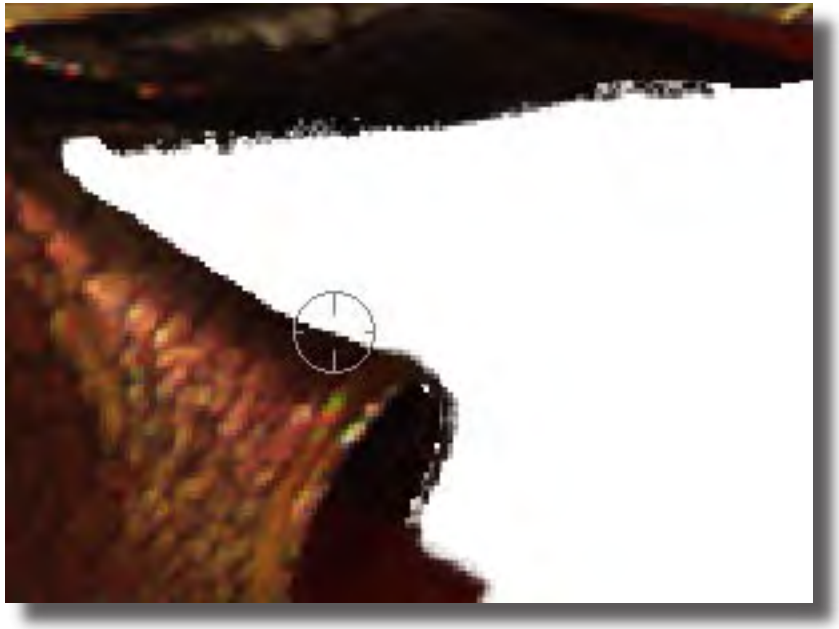


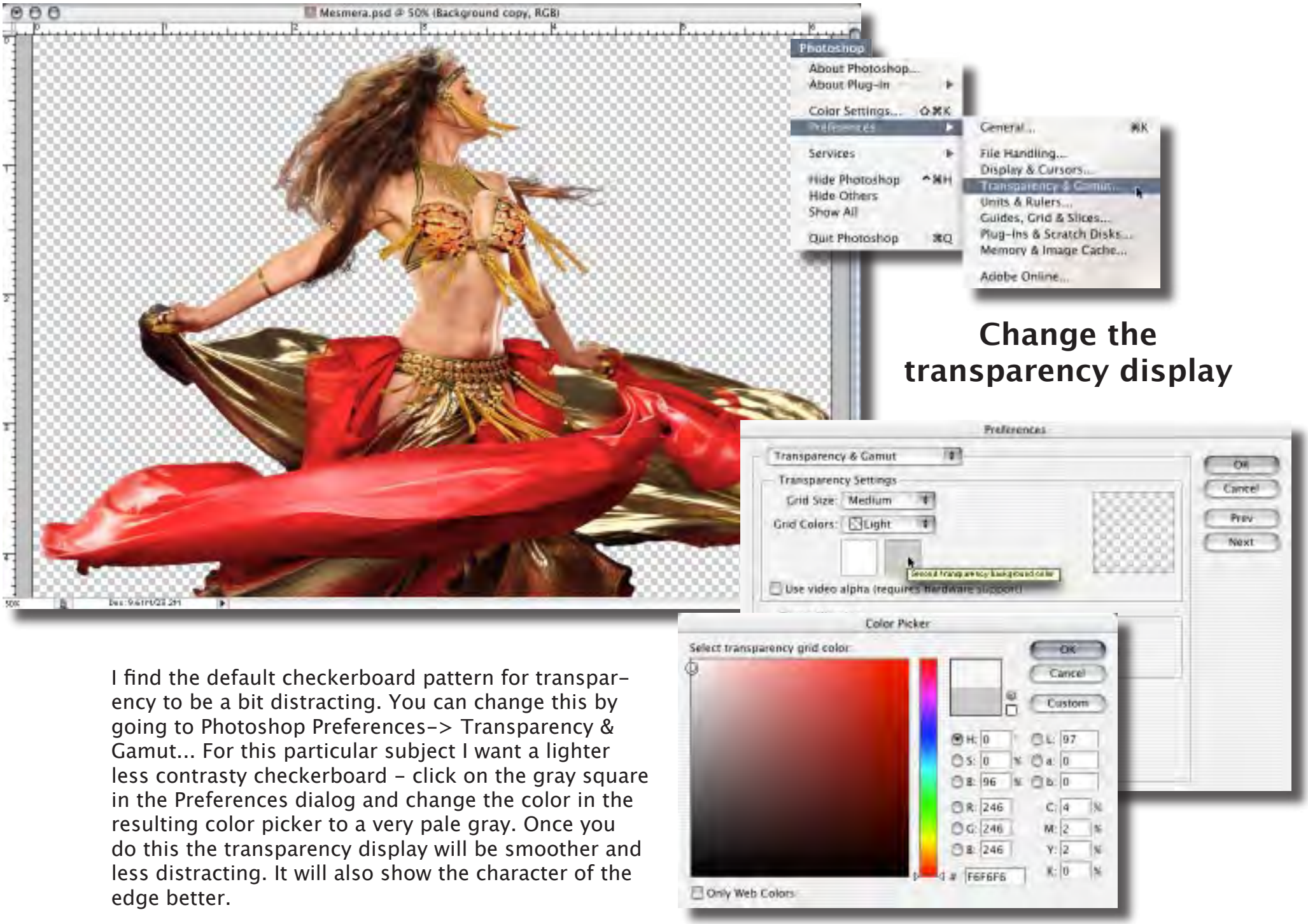
Use the Cleanup Tool to erase shmutz from the background. Use a lower opacity like 30% or so to make it easier to remove faint shmutz without erasing the fine fly-away hairs. You can also force some more transparency into some elements by painting into the subject with the Cleanup Tool at low opacity. Don't worry too much about areas that look like the edges are too sharp - we will fix that later without as much "hand work". Clean up the background and add back any missing areas of the subject. The Cleanup Tool actually works similar to the dodge and burn tools on an alpha channel, they have a cumulative effect but they sort of retain some shape from the image.

Clean up the extract edges

Use the Edge Touchup Tool to sharpen fuzzy or "dirty" edges that should be sharp. Brush along the edge and it will simultaneously subtract background and add subject sharpening the edge. This tool is sometimes harder to get a handle on. Use opacity controls to slow down the effect. You can also hold down the cmd/option keys and "push" the edge one way or another.

When you are done refining the edge you can hit the "OK" button - you exit the Extract dialog immediately and your subject will be on an transparent layer. Turn off the eye on the Background layer to see the transparency in the layer.





Change the transparency display

I find the default checkerboard pattern for transparency to be a bit distracting. You can change this by going to Photoshop Preferences-> Transparency & Gamut... For this particular subject I want a lighter less contrasty checkerboard - click on the gray square in the Preferences dialog and change the color in the resulting color picker to a very pale gray. Once you do this the transparency display will be smoother and less distracting. It will also show the character of the edge better.

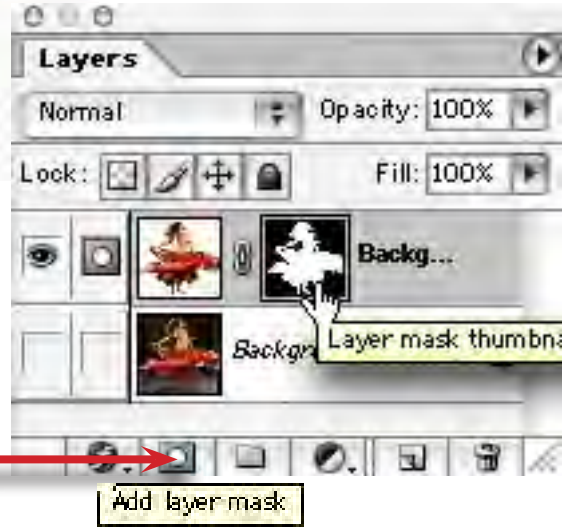
Load layer transparency into a layer mask

1.

Cmd/option click on the layer to load the transparency as a selection.

2.

Click on the new layer mask icon to put the selection into a layer mask

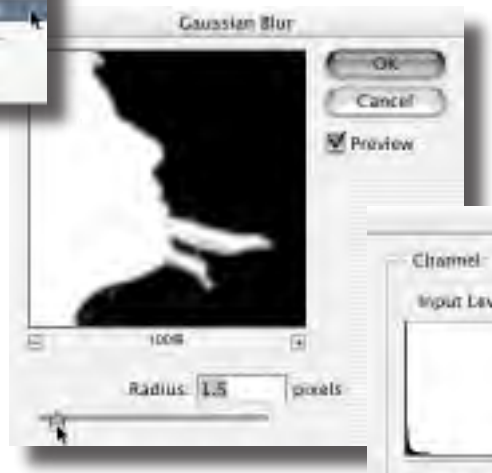


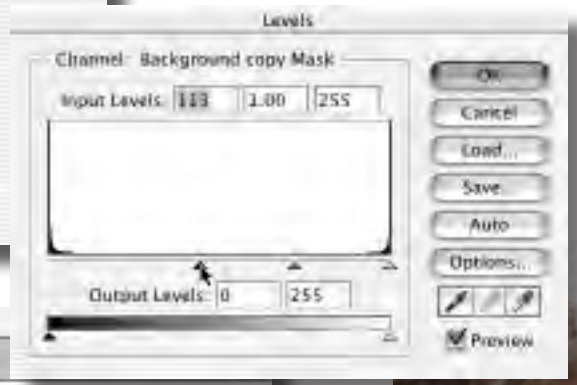
When we examine the edge of the subject we can find some areas where the dark background shows up as a faint line. We need to trim this back and soften the edge a bit but it would be nice if we didn't have to use the eraser and tediously brush along the edge. We also don't want to destroy the good details in the hair, etc..

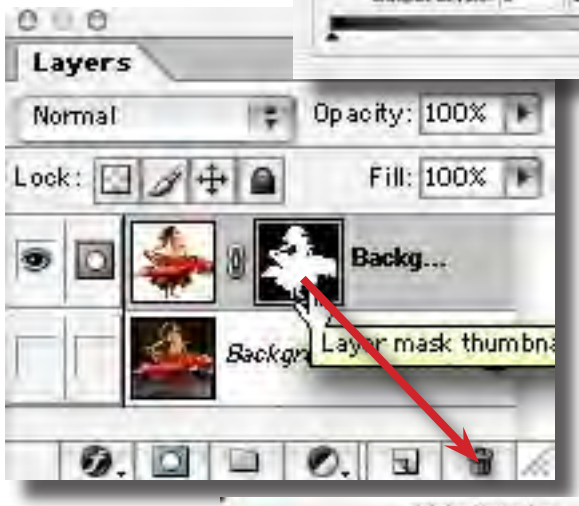
To fix this we will combine a layer mask with our layer transparency and then edit the layer mask to trim back certain edges. After we have a layer mask you'll notice that some of the dark edge disappears simple due to the combined effect of the mask. Do trim it further we start by blurring the layer mask...

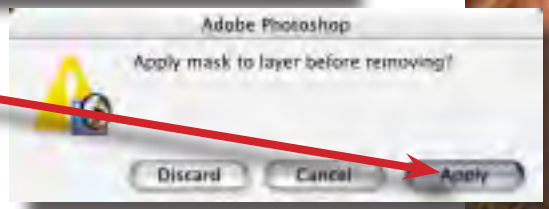
Blur the mask & choke the mask

Select Filter–> Blur–> Gaussian Blur... and blur the mask, about 1.5 pixels should work. This softens the edge. Then select Image–>Adjustments–> Levels and run the levels command directly on the mask. Pull the black slider in Input Levels to the right this will spread the dark areas into the gray blurred edge, sharpening the mask and consequently trimming the dark edge from our subject.



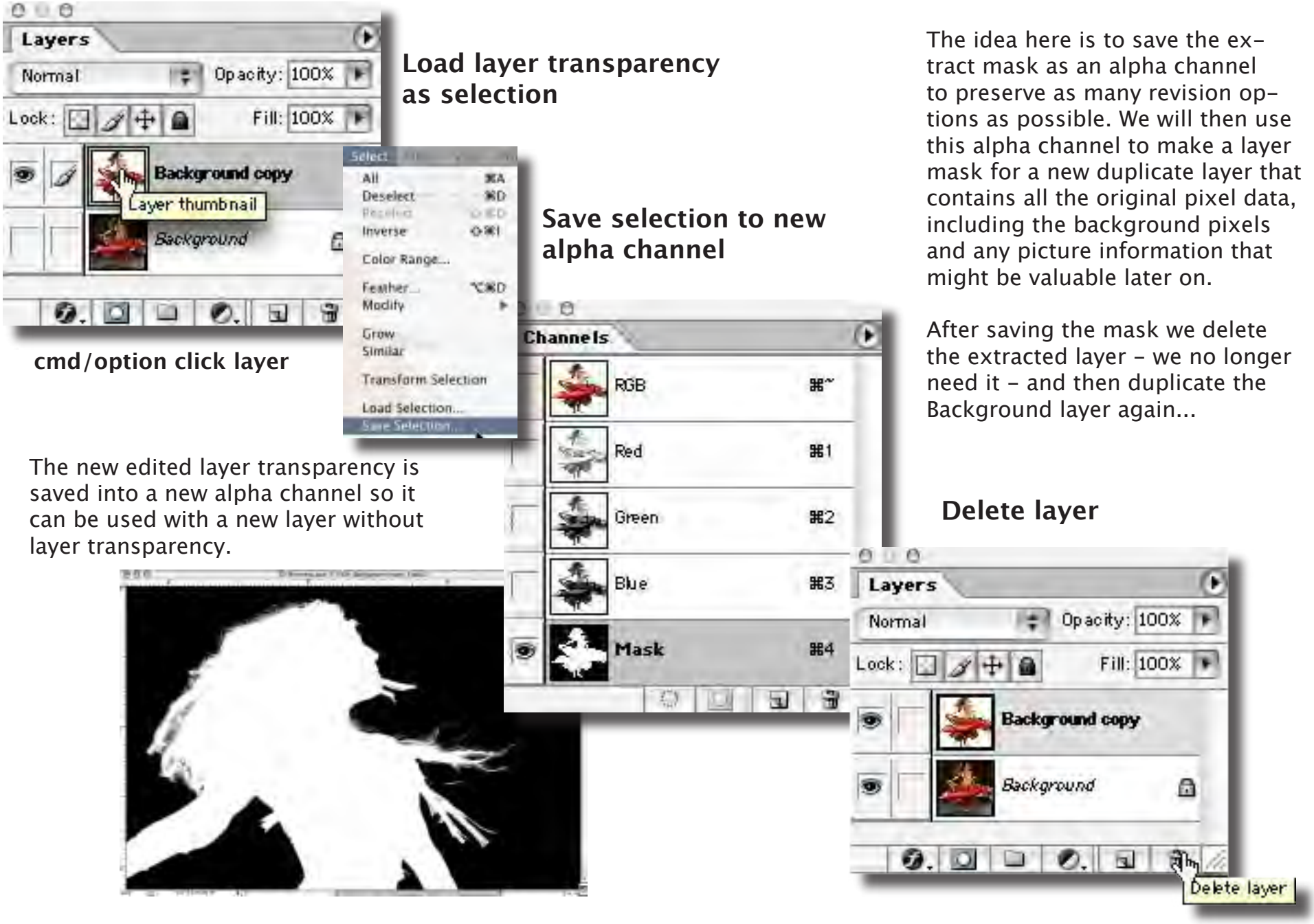






Apply the mask to layer transparency

After “choking” the mask in this manner you will notice that some areas where there was favorable detail in the mask edge are now blurred out or simply missing. To retrieve these “good” areas - like the hair wisps- simply paint back into the mask with white. The original layer transparency comes back and detail is re-stored. Once we have our layer transparency where we want it we are going to **throw away the layer mask!** Drag the mask thumbnail to the trash. A dia-log appears asking whether we want to apply the mask. Click on **Apply**. The mask transpar-ency is now applied to and combined with the layer trans-parency.



Load layer transparency as selection

cmd/option click layer

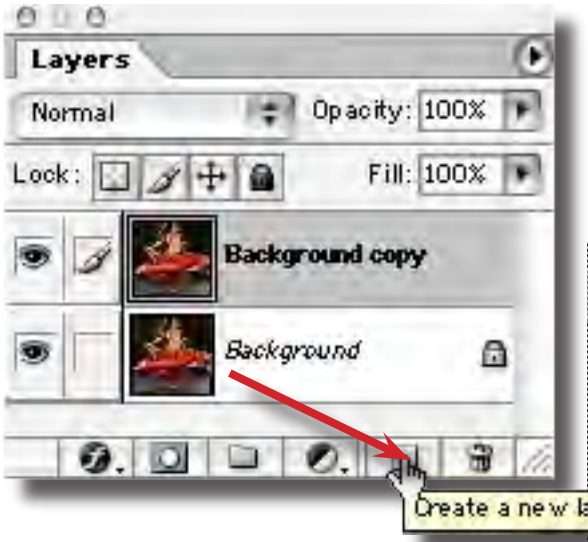
Save selection to new alpha channel

The idea here is to save the extract mask as an alpha channel to preserve as many revision options as possible. We will then use this alpha channel to make a layer mask for a new duplicate layer that contains all the original pixel data, including the background pixels and any picture information that might be valuable later on.

After saving the mask we delete the extracted layer – we no longer need it – and then duplicate the Background layer again...

The new edited layer transparency is saved into a new alpha channel so it can be used with a new layer without layer transparency.

Delete layer



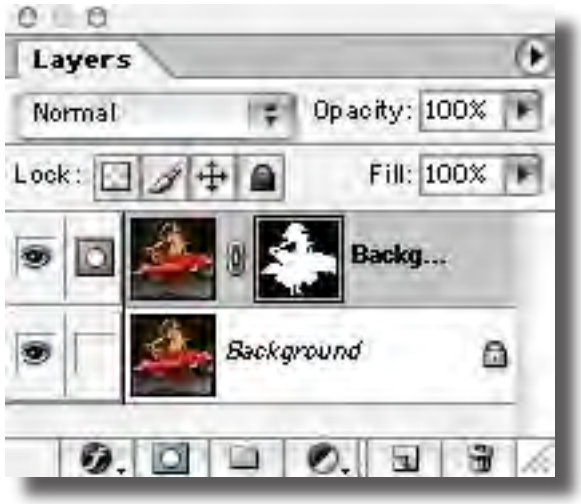
Duplicate Background

Load selection from alpha channel

Drag Background to new layer icon

Once we duplicate the Background we load the selection saved in the alpha channel. Then simply click on the new layer mask icon to put the selection into the layer mask. Now we can move this layer, with its layer mask intact, into a new document and the layer mask will isolate the subject from its original background. This whole exercise – extract, revise transparency, save mask, load selection, layer mask – allows us to have more revision flexibility once we've placed the subject into a new background. If we need to change any edges there will still be image detail behind the mask and we will be able to use it.

Put selection into layer mask

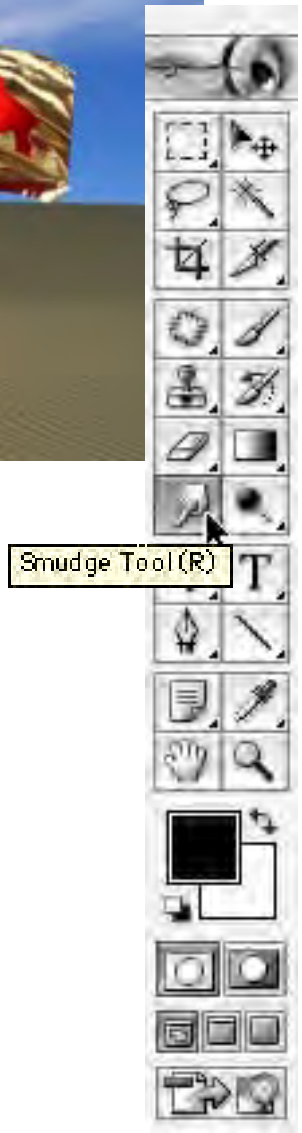


We can save this document with the masked subject layer and use it again later on with a different background. All we need to do now is drag the top layer into a background image file. Our dancer needs to be in a desert so...

Most tutorials would stop here but we are just getting started! Simply slapping one image on top of another does not make for a compelling composite. We need to check all our edges again and then add in all the little details that make the image look real. Will her feet sink into the sand? How much? What kind of a drop shadow do we need? How will we match the dramatic studio lighting with the flat, high noon light of this desert shot?

Well... here she is. Not very convincing yet is it? First we check all our edges and we notice that there needs to be more hair wisps around her arm.

Revise edges

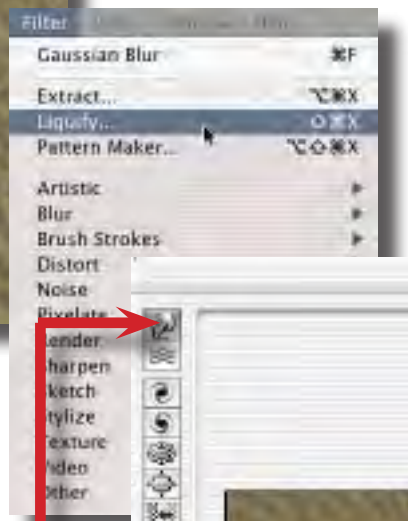


As good as the mask is it could still use some help. One little trick for adding convincing hair wisps is to use the smudge tool in the layer mask. Brush from the white areas of the mask (inside) into the black areas (outside). Use about 85% opacity with a small brush- experiment with multi-bristle brushes and brush dynamics. You can easily get strokes that taper off just like hair wisps.

Because there is a dark background in the subject's layer we don't have to worry about what parts of the image are revealed through these hair wisps. You can use this strategy to enhance the hair edges and put back detail that was lost during the masking process. Go around the whole edge and make sure that everything looks good against this new background.

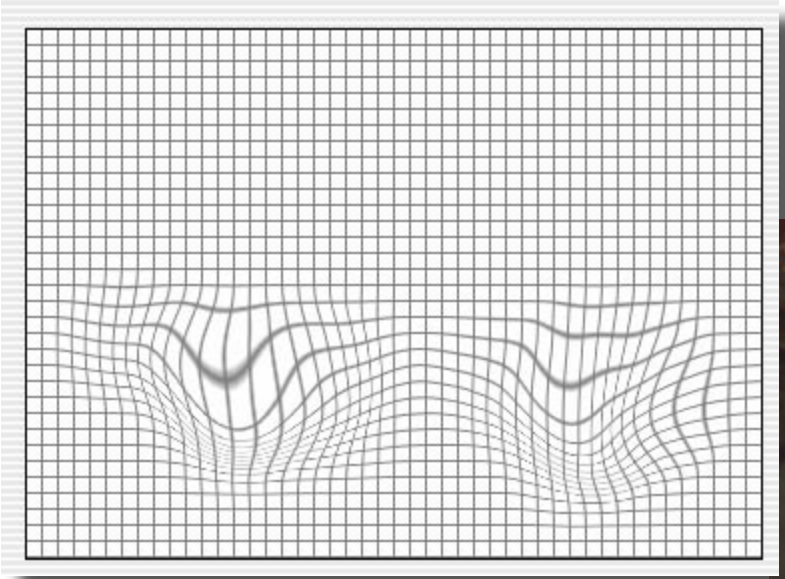
Lets look at the feet. We need to plant these feet in the sand. It would look better if we could get the sand to curve around the feet a bit. This looks like a job for Liquify. We're not going to use every feature of liquify to do this job – just the freeform "Warp Tool".

Liquify distort the sand

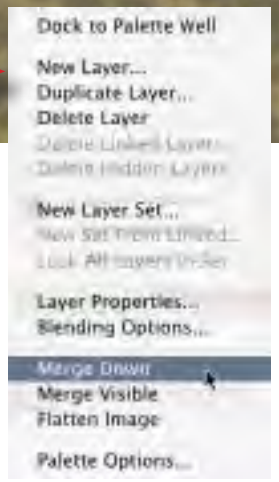


Select the Background layer in the Layers palette and make a rectangular selection around the area of the feet. Float this selection into a new layer by hitting cmd/option "J" on the keyboard. Now select Filter-> Liquify... to enter the Liquify dialog. Use the Warp Tool at the upper left corner of the dialog to push the ridges in the sand into little pockets for the dancers feet.

Liquify works by constructing a grid, using various tools to distort the grid lines and then recalculating the position of pixels in relation to the grid. You can display the grid using the "View Options" at the right of the dialog – check the "mesh" radio button. You can display the mesh by itself, as shown here or superimposed over the image.



Once you've finished warping the sand into shape click "OK" and check the position of the sand "pockets" with the feet. You might have to reposition the feet or re-distort the sand to make the two elements fit together. You can re-enter the Liquify dialog, just remember that multiple trips into Liquify will soften the image quality so its better not to over do it. When you are satisfied with the sand merge the Liquified sand layer with the background (from layer palette options).

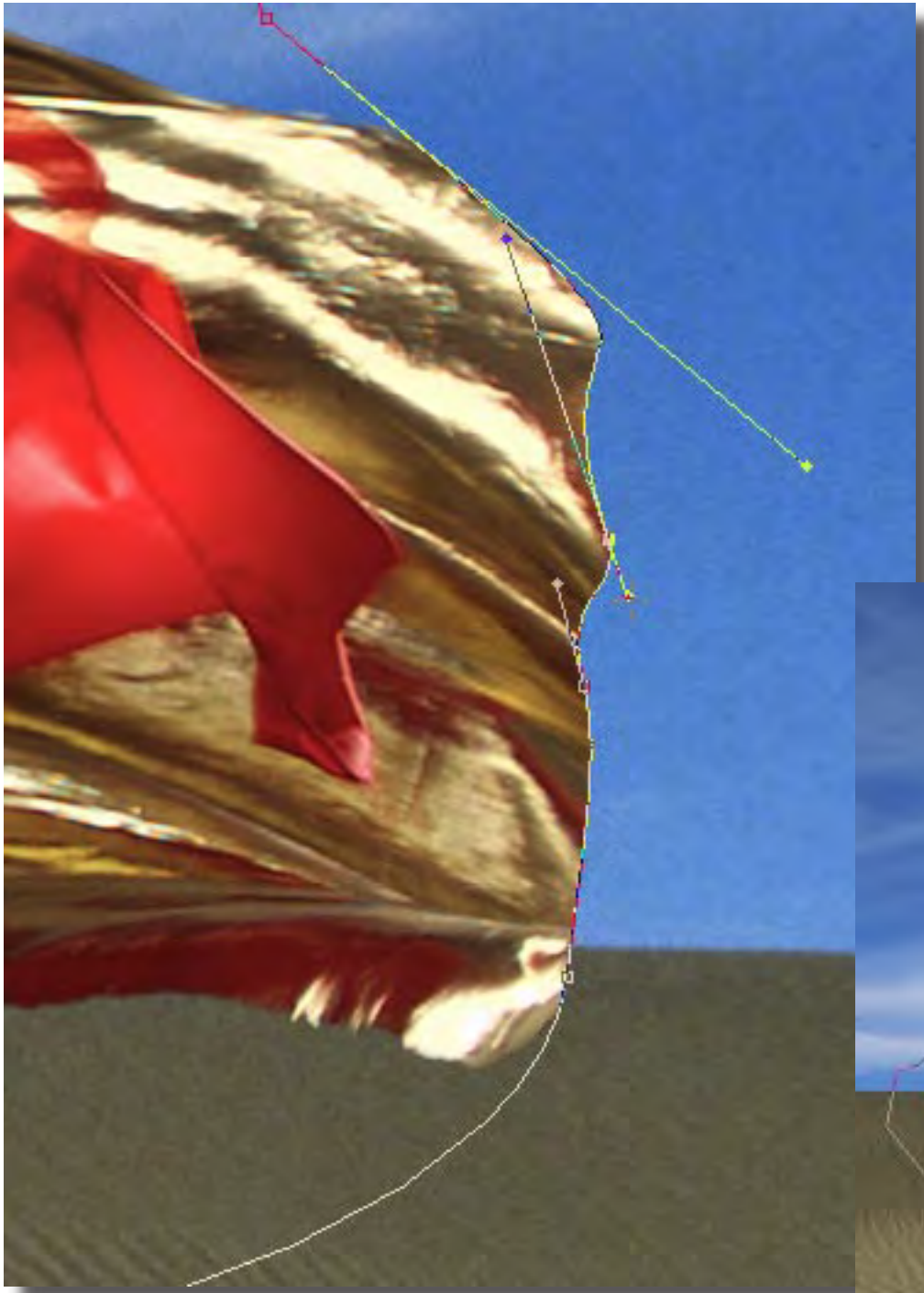


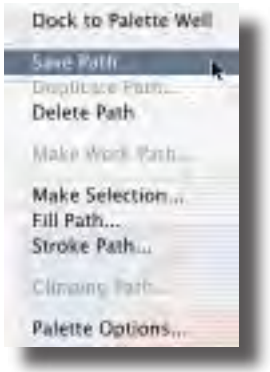
After pushing the sand into shape we have to consider burying the feet into the sand a bit. We could simply paint into the layer mask and hide the feet that way but it would be nice, if we change our mind later on, to be able to retrieve the mask edges for the feet without having to reconstruct the mask. In order to do that we need to use a separate mask to hide the feet...

Note: the merge step is not entirely necessary it might be better to keep the layer separate so you can change your mind later. I merged the sample file on the CD so I wanted to show that step here. In general practice its better to keep the extra layers.

Since we already have a layer mask if we click on the mask icon in the Layers palette we will create a new "vector mask". A vector mask is a little different from the standard layer mask - all masking is accomplished using paths. Once we have a vector mask we can use the pen tool to draw a path around the subject and define an additional mask. Select the Freeform Pen Tool from the tool option bar and draw a path that follows the contours of the feet. You can hold down the option/Alt key and place straight line segments around the rest of the figure- once you close the path the vector mask will hide the parts of the feet outside the path. The path remains editable so you can revise the path using the pen tool/keyboard commands as appropriate (change back to the regular pen tool for this). The vector mask is ideal for combining hard edge areas with soft edges - each type of edge can be treated separately, allowing for a lot of flexibility. There is another area of the figure that can benefit from this additional vector mask...

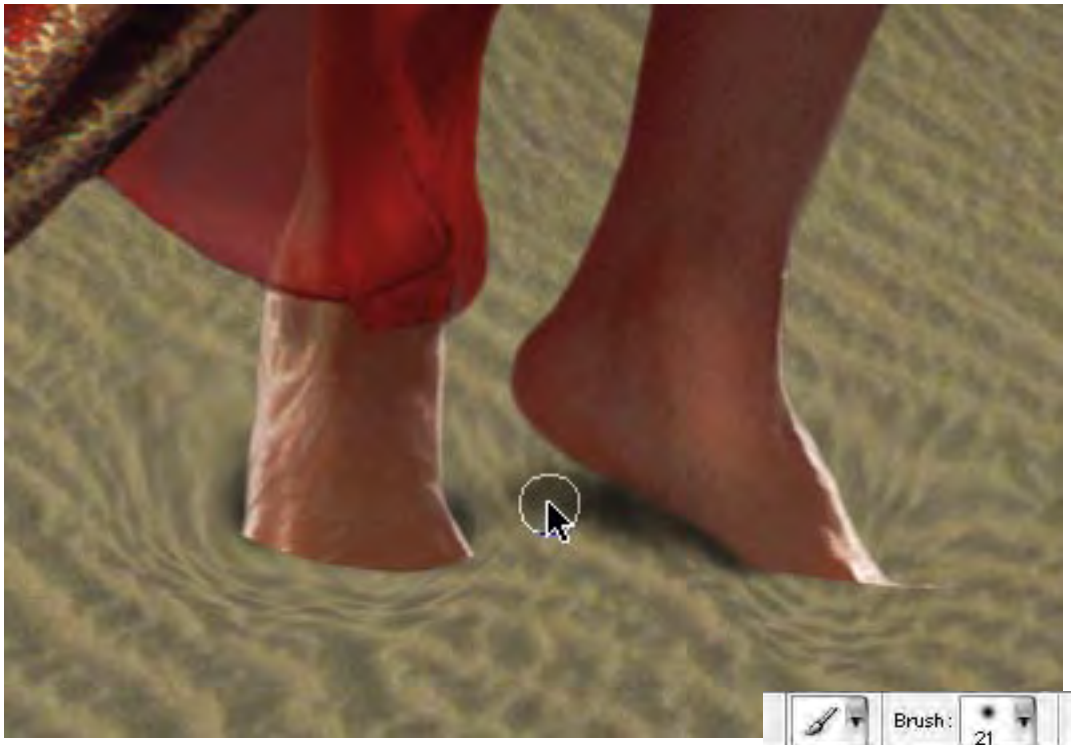
Hide Feet with Vector Mask

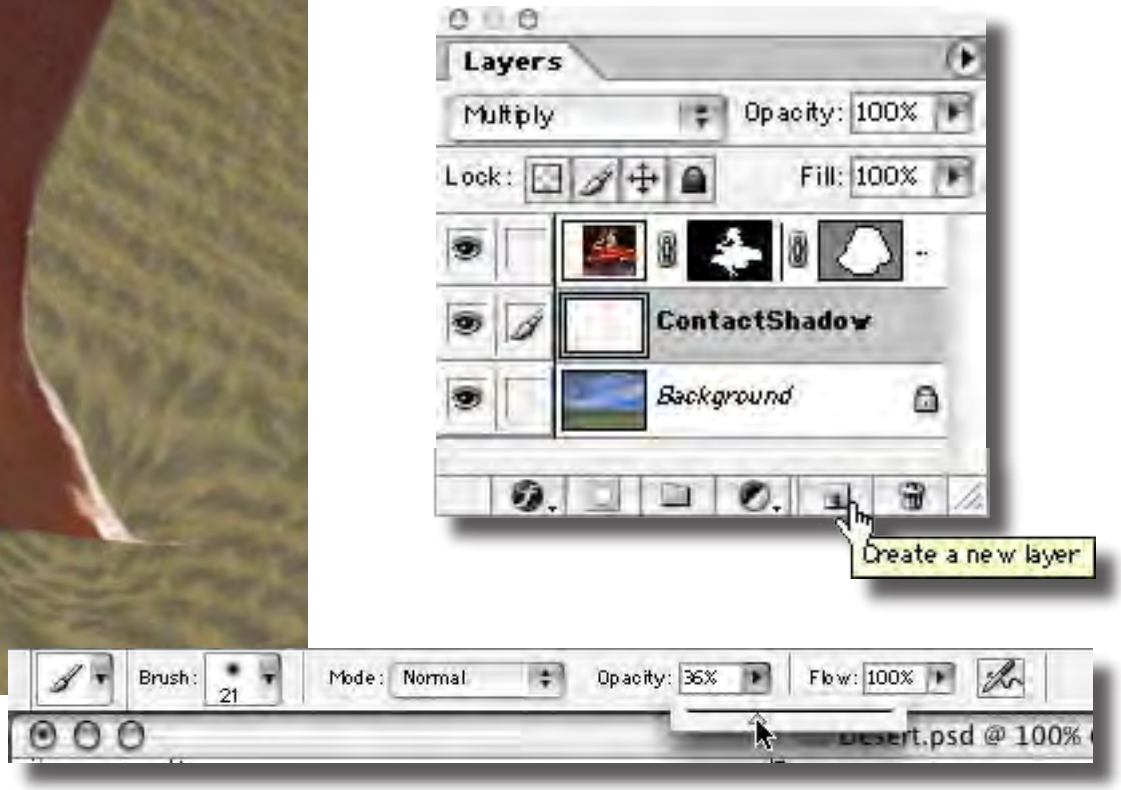




The edge of the skirt at the far right is cut of by the foamcore reflector and it now forms an unnatural straight edge. We need to fix this so that it looks more natural. Simply edit the path to trim away the straight edge and follow the contours of the flowing fabric. Vector masks are great for this type of edge – the Bezier curves are perfect for following the folds of fabric and creating a perfect smooth edge. Once we are satisfied with our path SAVE IT! (path palette options drop down at upper right)

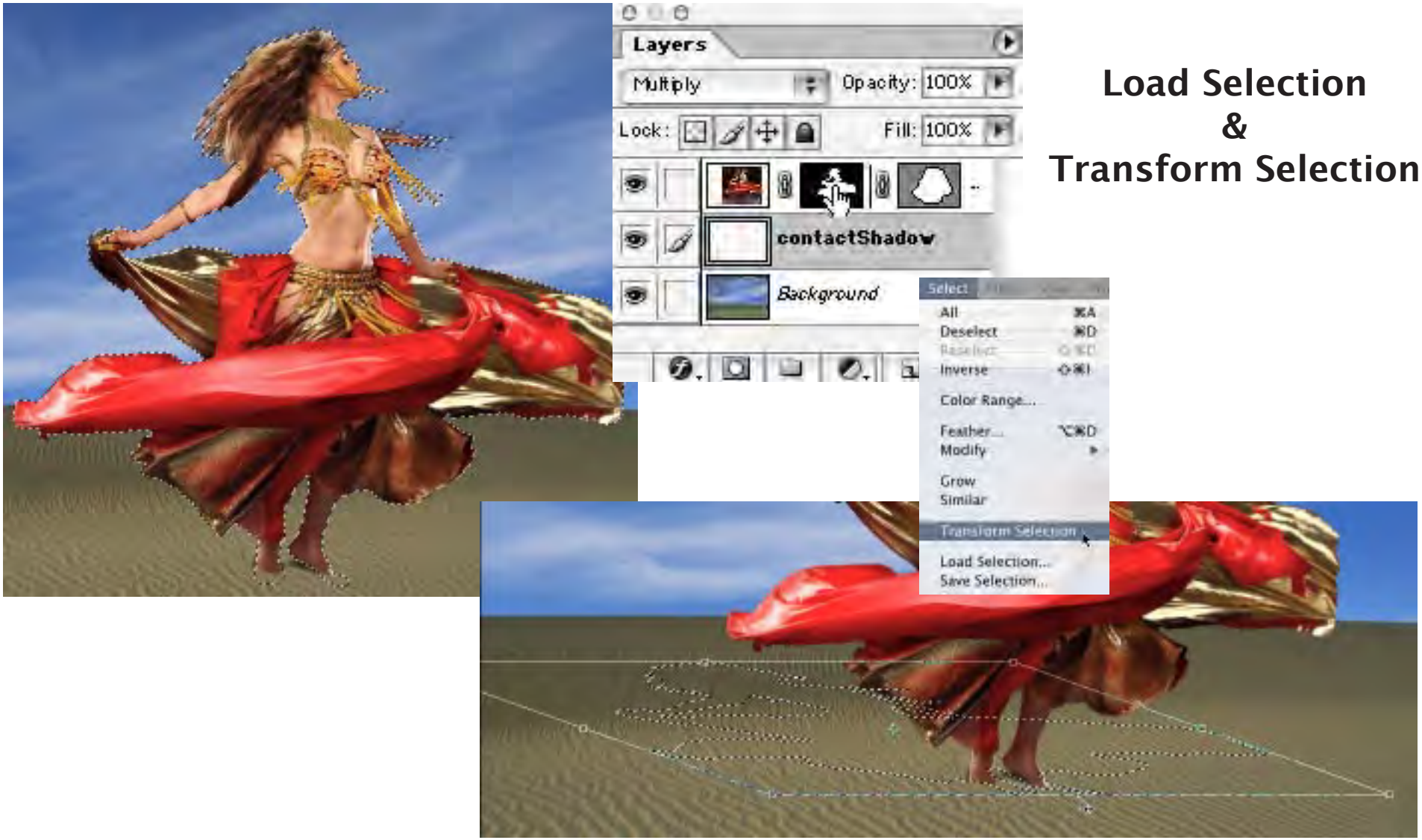
Create Contact shadow





We need to create what Jeff Schewe calls a “contact shadow”, where the feet contact the sand, in order to firmly plant the feet. This is the first step in giving the image some sense of dimension. Create a new layer under the dancer layer and set the apply mode to multiply. Now, paint into this layer under the feet with black paint at a reduced opacity to create the dark shadow right under the feet. This goes a long way towards creating a sense of reality in the composite. Without this “contact shadow” the image looks like a flat cut out pasted on top of another flat image. Once the contact shadow is there things start to look like they belong together. If the shadow gets too dark you can change the layer opacity to adjust it. Now we need to create a cast shadow to further the effect...

Load Selection & Transform Selection

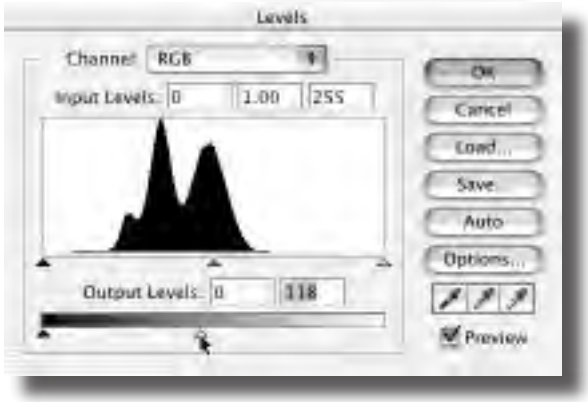


To create the cast shadow we will use the layer mask for the dancer. Cmd/option click the layer mask thumbnail in the “Layers” palette to load the selection the go to the Select menu: Select-> Transform Selection to scale and skew the selection into position for a drop shadow. The “Transform Selection” function is just like Free Transform - hold down the control key/right click to select from a contextual menu of transform options: scale, rotate, skew, distort and perspective. Position the selection for the main light on the figure which is coming from the right front. Once you are satisfied with the transform double click inside the transform marquee or click the check in the options bar to apply the transformations.

Create Cast shadow

Make sure you create the drop shadow "Levels" layer underneath the dancer - select any layer underneath the dancer first!

Once the selection is in place create a new "Levels" adjustment layer by clicking on the adjustment layer icon in the Layers palette. In the resulting Levels dialog move the white (right) slider in the Output Levels to the left to darken the underlying layers creating the drop shadow. The selection is automatically copied to the adjustment layer mask defining the shape of the drop shadow. It is now easy to re-enter the Levels dialog to change the depth of the drop shadow if we change our mind. The shadow is a little too sharp to look realistic but we can easily blur it...



Blur Cast Shadow

Select: Filter->Blur->Gaussian Blur and choose a radius of 7.5 or so. The main light on the dancer comes from a medium “Plume” softbox without the internal diffuser. The light is diffused but somewhat directional. We want the drop shadow to emulate the quality of that light so it should be slightly soft edged but not too soft. After blurring the edge you can paint into the layer mask to trim back some unwanted parts around the feet and maybe revise the attachment to the feet somewhat.

Now our composite is looking a lot more convincing! With all this movement, however, twirling skirts, etc... it seems that there should be some kind of dust or sand cloud at the dancer’s feet. Lets see what we can do about that. In the process we can learn a little bit about layer sets.

Create Layer Set & layer set mask

1.

OK... this next bit is a little more advanced application of layer sets so follow along carefully. We are going to create a cloud of dust at the dancers feet. We need to be able to control where the cloud is, the color of the cloud and how light or dark it is *and* the shape of the cloud swirls. We need 2 soft edged masks and an image layer to accomplish this. Last time we needed 2 masks we used a layer mask and a vector mask – but a vector mask is hard edged and that won't work here. We can't use 2 layer masks in 1 layer so... we're going to stick our cloud image layer with layer mask inside of a layer set and control the whole layer set with a mask!

(1.) Select "New Layer Set" from the layer options drop down at the upper right of the Layers palette.

2.

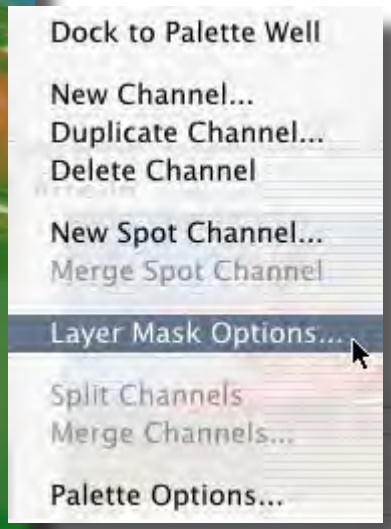
(2.) Hold down option/alt and click on the layer mask icon at the bottom of the Layers palette. This will create a black layer mask. We're going to work this mask before we put anything into the layer set!

3.

(3.) Click the "eye" icon for the layer set mask in the channels palette to make the mask visible on top of the image. We will now paint into the black mask with white to locate the area where we want the cloud of dust to cover the feet.

Paint Cloud Mask

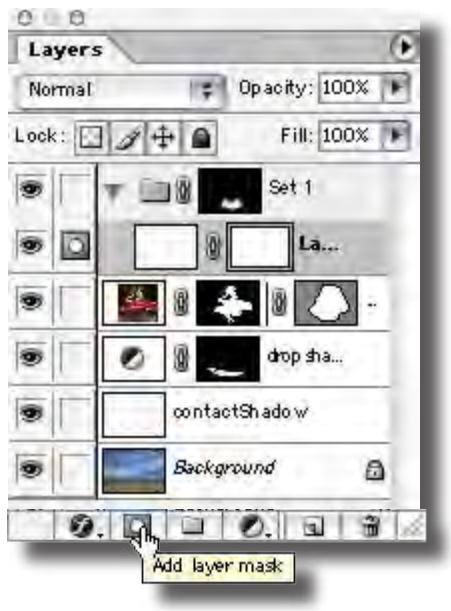
4.



The default color for the channel options mask is red – this doesn't provide enough contrast with the red skirt so we'll change this to green! **(4.)** Select Layer Mask Options from the Channel options drop down at the upper right of the channels palette – change the color to green.

5.

6.



Now use a large soft airbrush, about 300 pixels or so and paint into the Layer mask with white where we want the dust cloud to appear. Once the mask is finished **(5.)** Create a new layer by clicking the new layer icon at the bottom of the Layers palette – as long as the Layer Set is selected the new layer will appear inside of the layer set. Now, **(6.)** create a layer mask for the new layer by clicking the layer mask icon at the bottom of the Layers palette. We will use this "layer" for the color of the dust and we'll run the clouds filter on this "layer mask" to provide the swirls for the clouds.

Create the Dust Cloud

7.

(7.) Select: Filter-> Render-> Clouds to place a fractal noise resembling clouds into the layer mask.

Next sample a color from the sand to use for the cloud. With this color as a foreground color, select the empty image layer by clicking on the transparent layer thumbnail.

(8.) Now select: Edit-> Fill.. using foreground color, normal at 100%

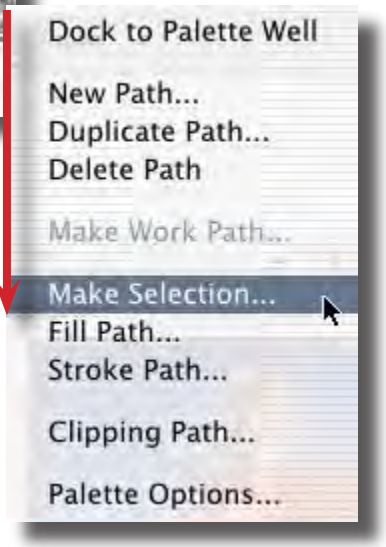
8.

The clouds now magically appear in the area defined by the Layer Set mask! We can move the clouds around using the move tool on the clouds layer and the layer set mask will keep the image registered over the feet. Move the swirls around until you get some “clouds” that you like. Everything is controllable separately - the color of the dust, the shape and contrast of the swirls and the location of the clouds. We will need the flexibility that this provides when we fine tune the lighting of the overall composition.

Before we move, on hide the new Layer Set by clicking the eye icon next to it in the layer stack- it will be less distracting for the next step

Create lighting effect for background

(1.) Draw path & make selection– feather about 50 pixels



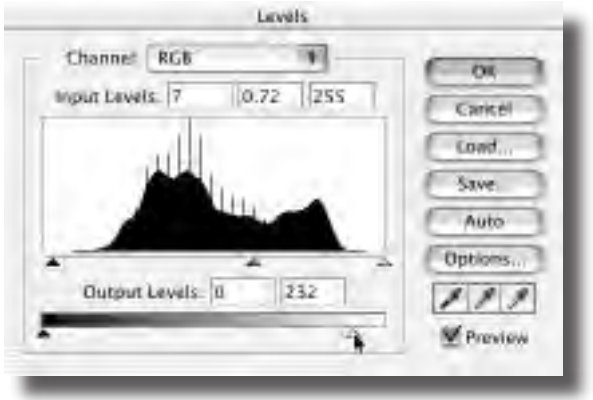
(2.) Make a new "levels" adjustment layer under the dancer

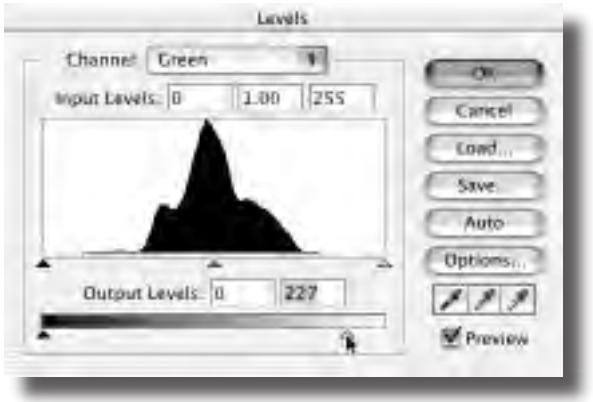
Even with all of the work done so far we still have a little problem with the realism in this composite. The dramatic studio lighting of our dancer does not match the flat high noon quality of light in our background image. We can't change the light of our dancer but perhaps we can make the background look like there was some supplemental lighting used in the overall shot.

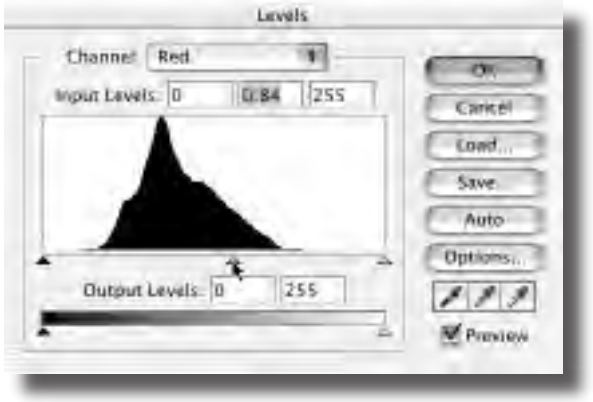
We'll start by drawing a path (1.) for a selection that will give us a beam of light that will indicate a light source for the rim lighting coming from the right rear of our dancer shot. Select "Make Selection..." from the path options drop down at the upper right of the paths palette. Use a feather of 50 or so. Then choose: Select-> Inverse. This will select everything outside of the beam of light.

Next we use a "Levels" adjustment layer (3.) to darken down the background outside of this light beam. Select "Levels..." from the adjustment layer icon at the bottom of the Layers palette...

Darken Background







Set the levels to darken and cool off the background – we're looking to create a sort of over-fill flash lighting look for the background. Set the Levels sliders as shown to the right. It now looks light we have a flash head positioned just out of frame at the right rear shining across the dancer to provide the rim light. By keeping the edge of the beam at her feet we can avoid having to show another cast shadow for this light direction – it looks like she's just starting to move out of the beam, not 100% accurate but still believable in context. The cast shadow behind her gives us the direction for the main light and now the image starts to look like we took a crew out into the desert with lights and generators to get this shot – high production value indeed!

Let's turn on our dust clouds and evaluate the overall image...

Adjust the Clouds

Here is the final image! When we have everything together we can decide exactly how light or dark the dust cloud needs to be, or shift the color of the clouds, etc.... The layer structure that we built allows for infinite revisions. We can make the background lighter or darker, re-work the dancers mask, add more hair wisps or shift the color of all of the elements. Make a print and then re-adjust accordingly. This image was created to incorporate a headline at the upper left and a smaller tag line at the lower right but we could easily move the dancer around to accommodate any design change that the client could wish for.

Conclusion

Congratulations, if you've managed to follow along so far you've learned about: Extract, Liquify, copying layer transparency to layer masks, applying layer masks to layer transparency, vector masks, using layer sets for multiple layer masks, the clouds filter and creating lighting effects with a Levels adjustment layer.

This tutorial represents only one of many ways to approach an image composite. I encourage you to experiment with as many different techniques as possible. This particular collection of techniques is very flexible and is intended more to suggest different methods for maintaining flexibility in your layer structures.

Try not to work yourself into a corner - don't merge or flatten layers if you can avoid it. Use adjustment layers instead of applying corrections directly to images. Clone into an empty layer rather than over your original pixels. Save your selections and paths. Utilize multiple layer masks using layer sets and vector masks. The key is to always plan for revisions. This is especially critical in commercial work where the whims of the client can & do wreck havoc with production schedules.

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Thank you

I hope you enjoyed this tutorial. The techniques outlined here represent just the tip of the iceberg. Photoshop is a very deep application - a person could spend years studying it and there will always be more to learn. If all this seems a little overwhelming, take a break, do what you feel comfortable doing in Photoshop and return to this tutorial again later on. Often, it takes several weeks for a particular technique to sink in so give it time.

I have other tutorials available online (navigate to the methods section), some are free and some are available for a modest charge. See tutorials and some examples of my work at:

http://www.varis.com

There are many learning resourses available on the web - here are a few other sites with good information:

http://www.russellbrown.com

http://www.creativepro.com

http://luminous-landscape.com/

http://www.imaging-resource.com/HOWTO.HTM

http://www.photoworkshop.com/

http://www.adobe.com/misc/training.html

http://studio.adobe.com/expertcenter/photoshop/main.html

http://www.ledet.com/margulis/articles.html

http://www.steves-digicams.com/

http://www.photoshopuser.com/

http://www.handson.nu/

http://photoshopgurus.info/

Thes last two links are typical of the majority of Photoshop tutorial sites - they are focused on cool graphics effects not photography. You might want to look over this material anyway - sometimes you can learn alot about basic functions in Photoshop.

I'm always trying to improve these materials and I'm always open to your feedback. You may contatct me via email at:

varis@varis.com

best regards, Lee Varis 2003