

Creative Animation with the Puppet Tool

With RICHARD HARRINGTON



Richard Harrington

A certified instructor for Adobe, Apple, and Avid, Rich is a practiced expert in motion graphic design and digital video. His visual communications consultancy, RHED Pixel, creates motion graphics and produces video and multimedia projects. He is the author of *Photoshop for Video*, *Producing Video Podcasts*, and *Understanding Adobe Photoshop* as well as a moderator at Creative Cow. A Masters Degree in Project Management fills out Rich's broad spectrum of experience. You can find out more about Richard and his training resources at www.RasterVector.com and www.PhotoshopforVideo.com.

Looking to create animation from photos? Learn how to combine layered Photoshop files with After Effects Puppet tool to quickly add natural motion. You can bend, warp, and animate both raster images and vector graphics, including still images, shapes, and text characters. In this session, you'll learn creative possibilities for creating animated elements for use in video and multimedia projects.

Selecting and Extracting Images

In order to work with something in Photoshop, it must be selected. While the human eye can differentiate between objects in a photo, software is not as advanced. Photoshop must be told what you want selected and what should happen to those selected pixels.

This process involves making a selection and is often done using the Marquee, Magic Wand, or Lasso tools. These tools are fairly intuitive and can often produce acceptable results with little work. A disadvantage of these tools is that once you deselect something, the selection data is not permanently saved with the document.



Tool	Command
Rectangular Marquee Tool	M
Elliptical Marquee Tool	M
Lasso Tool	L
Magnetic Lasso Tool	L
Polygonal Lasso Tool	L
Quick Selection Tool	W
Magic Wand Tool	W

In order to facilitate a smoother workflow, many people isolate individual pieces of a composition to their own layer. It is possible to place only what you want on an isolated layer. The empty space, often represented by a checkerboard pattern inside of Photoshop, is called transparency. An advantage to isolating elements to their own layers is that you can quickly load them as a selection and make further changes.

There are many approaches to extracting images. Some are obvious, such as using an eraser or selecting and deleting. Word processor-like functions of copy, cut, and paste also exist. Photoshop has a built-in "dummy" tool called Extract, which is very tempting, but proves lacking. Intermediate techniques include layer masking. Of course, this transparency needs to travel out to the NLE or motion graphics environment, so you'll need to look at alpha channels and support for the .psd file format. Transparency is the foundation of compositing, and since there are many different situations, there are also many different tools.

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Quick Selection

The Quick Selection tool is a new and welcome addition to Photoshop CS3. It builds upon the functionality of the Magic Wand and produces better results with fewer clicks. In fact, the Quick Selection tool takes priority over the Magic Wand and it is a suitable replacement. Click-and-drag in the image to make an initial selection. To make another selection, click-and-drag again. If you get too much of a selection, hold down the Option (Alt) key to subtract from the selection.

Refining Basic Selections

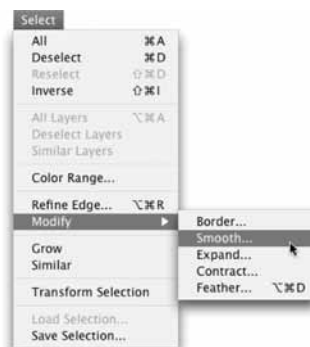
When you have most of your desired pixels, you can pick up little stray pockets by using the Select menu. There are seven additional options available in all versions of Photoshop that are useful. They are available for all selection tools and methods.

[TIP] Tame Those Edges

Rough Edges? If you have the jaggies, try running the median filter on your quick mask (Filter>Noise>Median).

This will allow you to smooth over selections made with the Lasso or Wand tools.

- Grow – Expands your selection by choosing pixels that are both adjacent to the current selection and resemble the colors in the current selection. The selection will grow based on the tolerance setting you have in the Options bar for the Magic Wand.
- Similar – This command works like Grow, except pixels need not be adjacent to the current selection.
- Contract – This pulls the active selection inward a specified number of pixels.
- Expand – This pushes the active selection outward a specified number of pixels.
- Smooth – This useful command rounds out selections and gets rid of sharp corners. Specify an amount as a Sample Radius (larger numbers mean smoother edges).



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- **Border** – This command uses the current selection to create a new area of a user-specified thickness that borders the previous selection. It is limited in its practical applications, but can be useful for video pros to “de-fringe” an object. If your object has rough edges, you can load the object, then use the border selection to specify a thin two- or three-pixel border. This area can then be deleted or blurred. (Think of this as “choking the matte.”)
- **Feather** – The final step of most selections is feathering. This generates a graduated edge. Think of feathering as the difference between a ballpoint and felt-tip pen.

[TIP] Reselect an Accidental Deselect

Want to go back to your last selection? Photoshop stores your last selection in RAM. As long as the current document is open, you can choose Select>Reselect or press Shift+Cmd+D (Shift+Ctrl+D).

Refine Edge Command

While the Select menu offers several options, there is always room for improvement. Photoshop CS3 offers a powerful option for refining a selection. The Refine Edge command can be accessed two ways. It is available in the Options bar for all selection tools. It can also be chosen from the menus by choosing Select > Refine Edge. This command is very intuitive and its sliders provide quick feedback as you refine a selection.

1. Make an initial selection using a tool of your choice.
2. Click the Refine Edges button in the Options bar.
3. Click the triangle next to the word Description to see a more detailed description of the options for selection refinement.



4. Adjust the different sliders to tweak the selection.
 - **Radius:** Refines the selection edge.
 - **Contrast:** Increase the contrast of a selection's edge.
 - **Smooth:** Removes any jagged edges.
 - **Feather:** Softens the edge of the selection
 - **Contract/Expand:** This will grow or shrink a selection.
5. Click one of the preview icons to change how the selection is displayed. There are five options to choose from, experiment with the different choices to see which one you prefer.
6. Click OK to create the selection.

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Layer Masking

Layer masking is the best way to extract an image. It is extremely flexible in that it supports multiple levels of transparency. Also, you can continue to touch up your mask throughout the postproduction process. Change your mind, and you can restore any part or even all of the background. To encapsulate the technology, a grayscale image is attached to the layer, which then masks part of the layer. The term mask is very appropriate because parts of the layer are hidden, not erased. You can add or subtract to a layer mask by simply painting on the mask. Masks are stored with the document when you save it and can be modified at any point.

[Tip] Resolution Matters when Masking

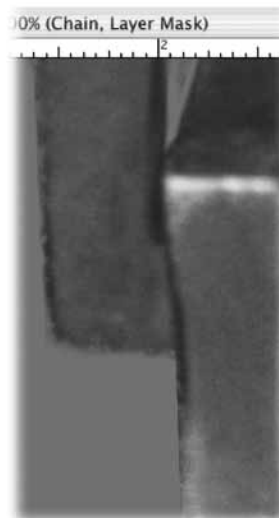
If possible, work with a higher dpi source image. This way you can zoom in farther without pixelization. This is helpful when building the layer mask. You can always downsample later.

It is best to start a layer mask with a rough selection. Once you have the Background layer unlocked (floating), make a rough selection with the Polygonal Lasso tool.

With the selection active, click on the Add Layer Mask button at the bottom of the Layers palette. A black-and-white matte is now added to the layer. Black areas are 100% transparent; white areas are 100% opaque. These layer masks can also be blurred for soft edges, or contain gray values for partial transparency. When you are ready to clean up the layer mask, select your Paintbrush tool and load the default colors by pressing the D key. White will be used for areas that are opaque (solid), and black will be used for areas that are transparent. You can now toggle between black and white by pressing the X key. A good mnemonic for this short cut is Devil's Xylophone. For large areas, use a large brush. You can quickly change brush size using the [and] keys. You can change brush softness with Shift+[or].

Zoom into the document so that you can easily see what you are working on. Start to paint, using a soft-edge brush. Make sure you are working on the mask. Look for a thin border around the mask thumbnail, which is to the right of the layer thumbnail. If you are working on a tough area, you may want to switch to a smaller brush or reduce the opacity of your working brush. Less opacity will require more strokes to build your mask. (Think of them as coats of paint.)

You can use the Paintbrush tool to draw straight lines. Click for the starting point, and hold down the Shift key and click for the second point. Photoshop will draw the straight line.



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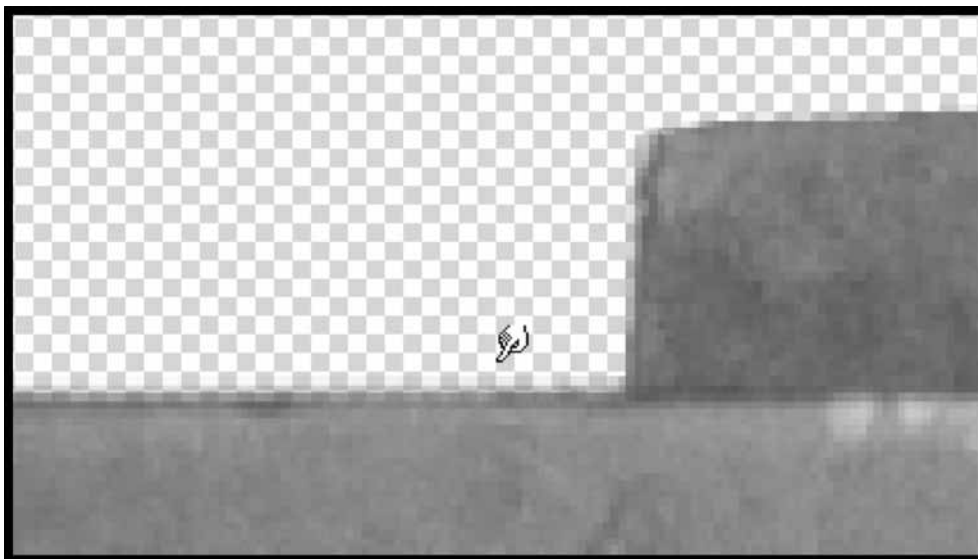
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Refining the Layer Mask

Chances are the layer mask is pretty good, but like most things it can always be better. There are a couple of special tricks you can use to make a “perfect” layer mask:

Contrasting – First, place a high-contrast, solid color directly behind the masked layer. This is a temporary step, but it makes it easier to see stray pixels. In our case, go to the Create New Fill Or Adjustment Layer icon at the bottom of the Layers palette and choose Solid Color. At any time, you can change the solid’s color by double-clicking on the Layer icon.

Smudging – By using blending modes, the Smudge Tool becomes a great way to touch up your layer mask. There are two additional modes available to the Smudge Tool when in the Mask mode, Lighten and Darken. You can quickly shift between these modes by using the Shift++ and Shift+- key combo. Use the Darken mode to push the dark edges of the mask in; use the Lighten mode to push the white pixels out. Set the Smudge Tool to a low-pressure setting, and use short strokes to push the pixels around and fill up your layer mask. As always, the [and] keys change brush size, and the spacebar will give you the Hand tool to pan around.



Blurring – You can use the Blur tool to control the blurring directly or use a filter. Remember, you are blurring the layer mask only, not the image. The more blur you use, the more the edges will feather. Experiment with blurring until you get a realistic edge. If you ever go too far, you can always paint detail back in by painting with white.

Once you have the perfect layer mask, you can use it in different ways. If you keep it inside of Photoshop, the transparency is preserved. To use it in applications that do not recognize .psd layers, you must create an alpha channel. At any time, you can choose to enable, disable, or permanently apply the layer mask. You access these advanced options by right-clicking on the Mask icon.

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Color Range

A very powerful but overlooked tool can be found under the Select menu. Color Range makes it easy to select large areas of color or color ranges. To begin, use the Eyedropper on the desired color or area. To add to the selection, use the Plus Eyedropper; to subtract, the Minus Eyedropper. The Fuzziness control will soften your selection by increasing tolerance for stray pixels. It is also possible to preview the selection as a mask by using the Selection Preview pulldown menu. The Color Range command can also be accessed with the contextual menu when a selection tool is active.

1. Choose Select>Color Range to launch the Color Range command.

2. With the eyedropper, click on an area. You'll see an initial selection created in the dialog window.

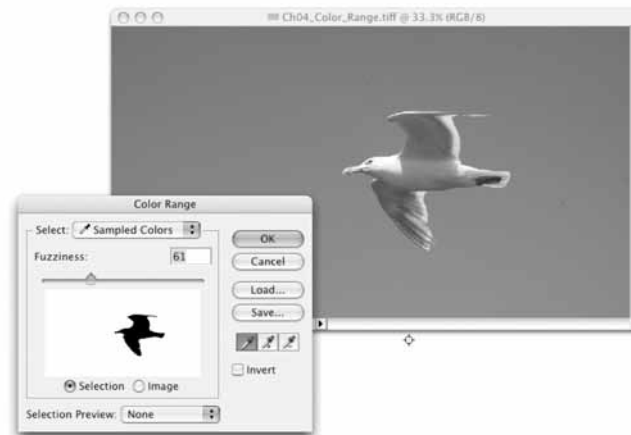


3. Hold down the Shift key and click on more to build a larger selection.

4. Adjust the Fuzziness slider to taste.

5. If you get too much selected, you can hold down the Option (Alt) key to subtract from the selection.

6. When satisfied, click OK.



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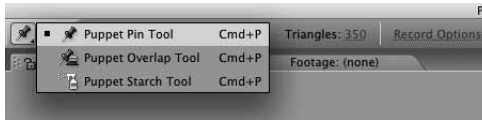
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The Puppet Tools

The Puppet tools can be used to quickly add natural motion to photos or vector artwork.

The tools use an effect (called the Puppet effect) which will automatically be applied when you use the tools. The Puppet tool warps the image based on the positions of pins that you place. You can use pins define what parts of the image should move (or don't) and what parts should be in front when other parts overlap.



- **Puppet Pin tool** – Use to place and move Deform pins.
- **Puppet Overlap tool** – Use to place Overlap pins, which indicate which parts of should appear in front of others when a distortion causes parts to overlap.
- **Puppet Starch tool** – Use to place Starch pins. These stiffen parts of the image so that they are distorted less by the warp.

Placing Pins

By placing the first pin, After Effects will automatically attempt to break the image into a triangular mesh. You can see this mesh when a Puppet tool pointer is over the area that the outline defines. The mesh and the image pixels are interconnected, so moving the mesh will move the pixels.

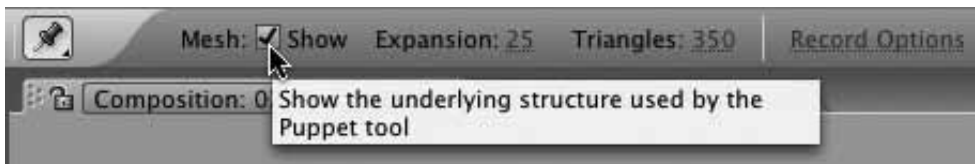


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- If you move a Deform pins the mesh changes shape. After Effects attempts to keep the overall mesh as rigid as possible to cause natural, life-like movement.
- A layer can have multiple meshes. Do this if you want to control distortion independently.
- The meshes do not understand moving footage (such as video) and will not update.



Note: To show the mesh, select Show in the Tools panel.

Puppet Overlap controls

You can use the Puppet Overlap tool to apply Overlap pins. This is an easy way to control apparent depth. You must apply Puppet Overlap pins to the original outline.

- **In Front** – This shows the apparent proximity to the viewer. In Front values are added together for where extents overlap. You can also use negative In Front values.



- **Extent** – This is how far from the Overlap pin its influence extends. The fill is dark if In Front is negative; the fill is light if In Front is positive.

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Puppet Starch controls

When distorting one part of an image, you may want to prevent other parts from being distorted. The Puppet Starch tool is used to apply Starch pins to keep parts rigid. You must apply Puppet Starch pins to the original outline.

- **Amount** – The strength of the stiffening amount. The Amount values are added together for places on the mesh where extents overlap. You can use negative Amount values. Small Amount values are good for preventing image tearing without introducing much rigidity.
- **Extent** – This is how far from the Starch pin its influence extends. The Extent is indicated by a pale fill in the affected parts of the mesh.

Sketching Motion with the Puppet Pin Tool



With Sketch, you can animate the motion path of one or more Deform pins in real time (or a specified speed). This makes it easy to create natural movement and to sync it with audio or other elements.

Be sure to click Record Options in the Tools panel.

- **Speed** – This is the ratio of the speed of recorded motion compared to playback speed. If Speed is 100%, the motion is played back at the exact same speed at which it was recorded. If Speed is less than 100%, the motion plays back faster than it was recorded. This is a useful way to draw elaborate paths.
- **Smoothness** – Try using a higher value to remove extraneous keyframes from the motion path. It is in fact better to have fewer keyframes if you want smoother motion.
- **Use Draft Deformation** – If your system is lagging, try this option. It will ignore Starch pins when sketching which improves system performance.

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Watch, Try, and Learn!



The Puppet tool is much harder to write about than to show. Despite multiple attempts at creating clear step-by-step directions, it just hasn't worked (good thing I don't write user manuals for a living). To bring this tool to life... I present 30 additional minutes of video training... this matches some of what we will cover in class today. I suggest you download these as a refresher, as the subtleties of the tool are a bit complex.

- **Hands On Files** – http://www.photoshopforvideo.com/downloads/Puppet_Tool_Samples.zip
- **Video Tutorial #1** – http://www.photoshopforvideo.com/downloads/Puppet_Tool.zip
- **Video Tutorial #2** – http://www.photoshopforvideo.com/downloads/Puppet_Tool2.zip

These links will be live for 60 days after Photoshop World.

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Website Info: www.rhedpixel.com, www.photoshopforvideo.com, www.VidPodcaster.com, www.RasterVector.com

Contact Info: RHED Pixel for production services, Creative Cow for technical questions.

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