



Creating Spirals

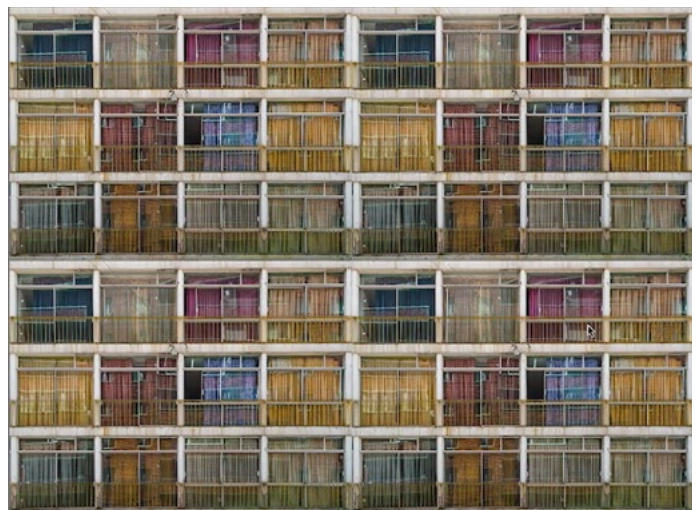
# Creating Spirals

I recently saw an interesting spiral shape effect in a photograph and wondered if there was a way to re-create something similar in Photoshop. After working with the program a bit, I found a technique that uses an old filter to create a fun, new effect. This lesson will cover some creative uses of Photoshop that will result in this look.

## The Polar Coordinates Filter

Photoshop's Polar Coordinates filter can take something that's circular and straighten it out or it can take something straight and bend it into a circular or spiral shape. The filter can be accessed by going to the Filter menu at the top of the screen and choosing Distort > Polar Coordinates. In the Polar Coordinates dialog, we have the option of choosing "Rectangular to Polar" or "Polar to Rectangular." The "Rectangular to Polar" setting will take something with straight lines and curve it into a circle. The "Polar to Rectangular" setting will take something that is curved into something like a circle shape and straighten it out.

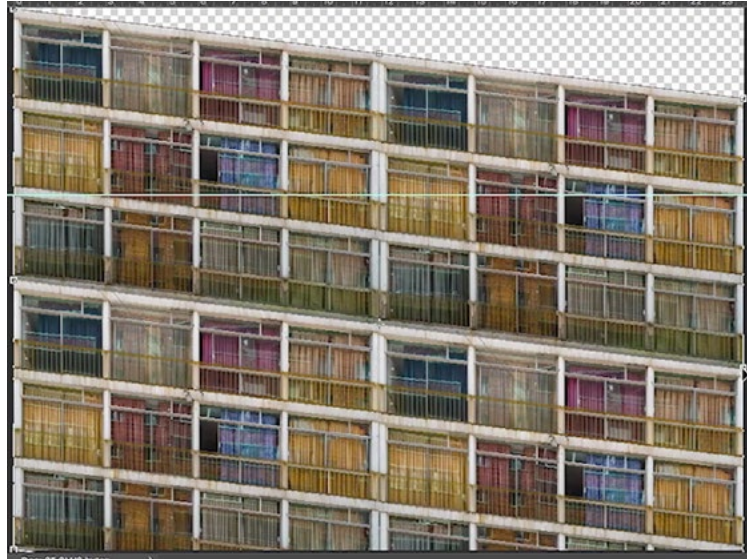
To demonstrate how the filter works, we're using the example photo of a grid of windows. The walls and floors between the windows are perfectly horizontal and vertical. If we applied the Polar Coordinates filter on the image as is, it will put everything in a circle, where each floor lines up. We want to create a spiral effect, however, so we're going to skew the image first. We'll need a horizontal guide, and we'll create one by clicking within the rul-



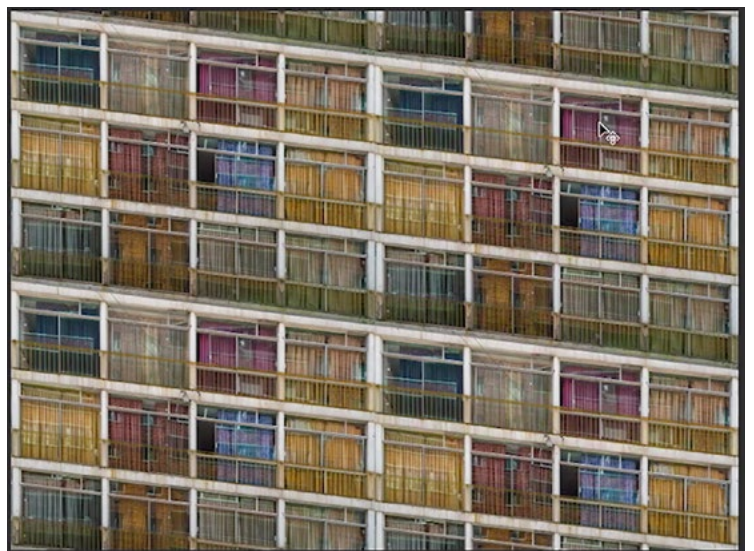
**We're going to convert this image into a spiral.**

er at the top of the image window and dragging down. We'll position the guide so that it aligns perfectly with one of the floors. Note: If the rulers aren't visible in your interface, tap Command+R on your keyboard (Ctrl+R on Win). Next, we'll go to the Edit menu and choose Transform > Skew. Transform handles will appear around the image layer and we'll drag the right edge of the document down until the horizontal line of the next floor up aligns with the guide (see screenshot). We'll hit Enter/Return to lock in the transformation. Now, we need to fill in the empty corner in the top right of the document and we'll do this with a duplicate of the image layer. To duplicate the image layer, we'll hit Command+J (Ctrl+J on Win) and then we'll drag the duplicate up so that the bottom edge of the layer aligns with the top edge of the original image layer. We just want to make it look like the windows continue upward.

Because parts of the layers now extend outside the document frame, we're going to go to the Select menu and choose All and then go to the Image menu and choose Crop. This will discard anything that extends beyond the bounds of the document. We'll then combine these two layers together by going to the Layer menu and choosing Merge Visible.



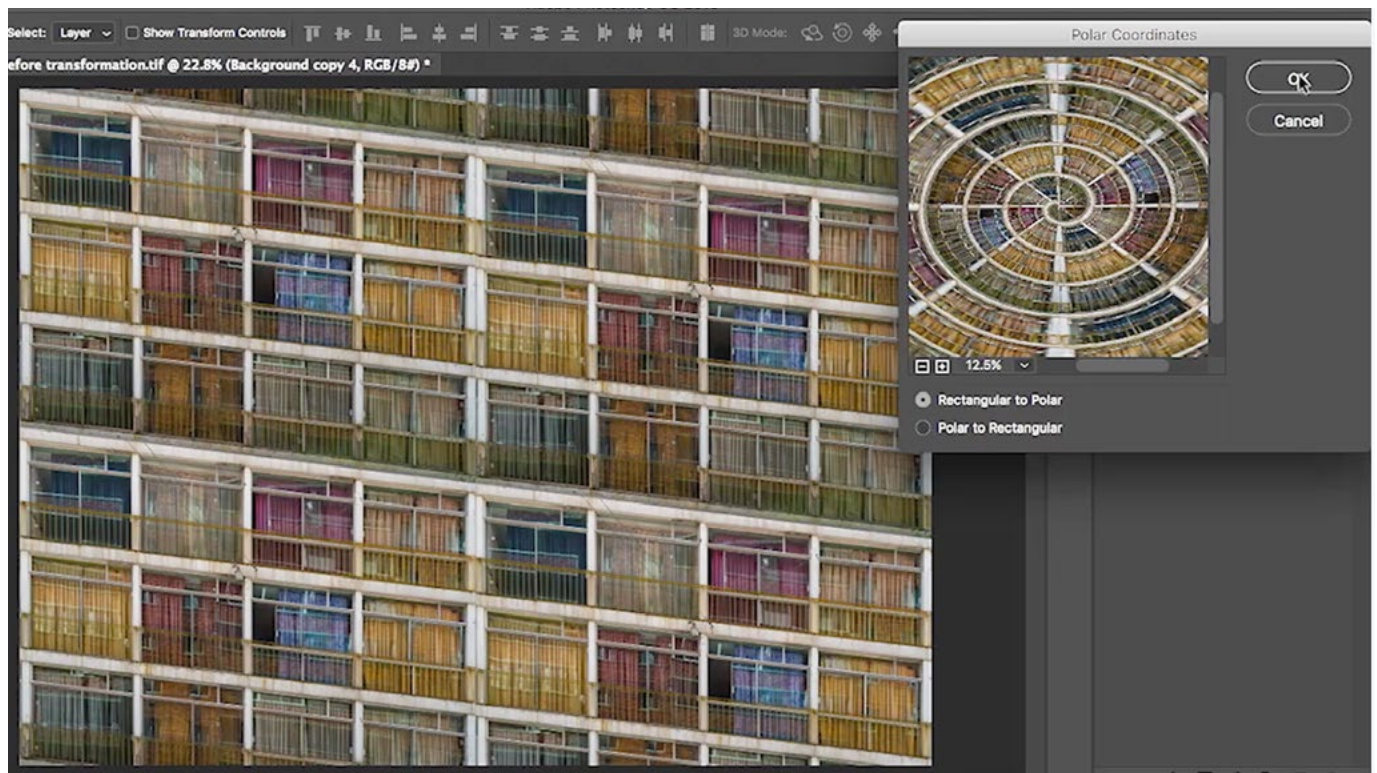
**We created a horizontal guide and are using the Skew option with the Transform command to line up one floor with the floor above it.**



**A duplicate of the original image layer is used to fill in the empty area in the upper right corner.**

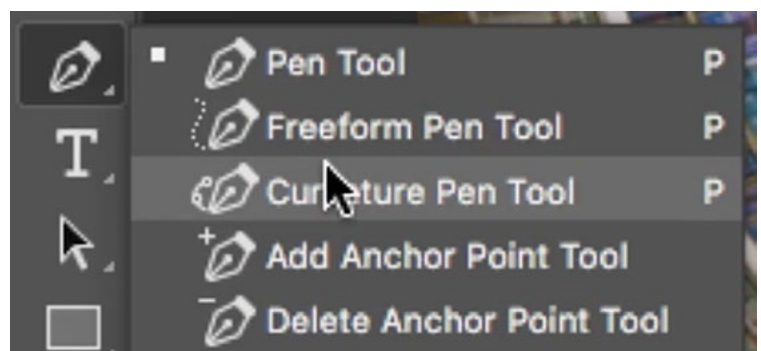


Now we'll turn the image into a spiral. We'll go to the Filter menu and choose Distort > Polar Coordinates. In the dialog box, we'll choose the "Rectangular to Polar" setting and click OK. The result is an interesting spiral effect.



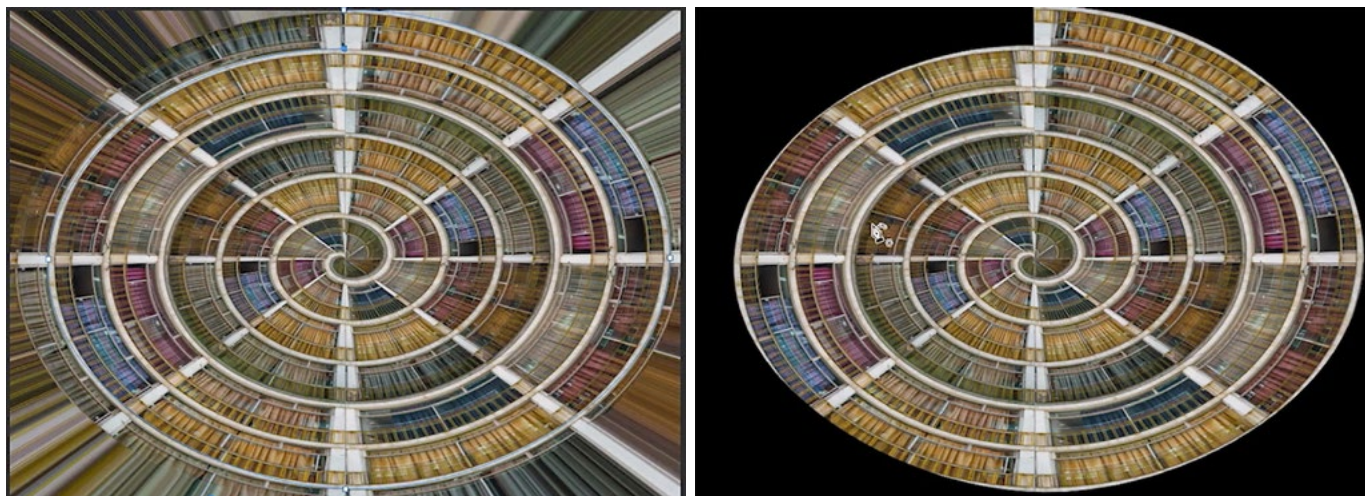
The Polar Coordinate filter is being applied, using the Rectangular to Polar setting.

To finish off the image, we're going to get rid of the excess outside of the spiral. We'll use the Curvature Pen Tool, which can be found grouped with the regular Pen Tool in the Toolbar. We'll use the Curvature Pen Tool to click on the same floor line in a few locations around the circle, starting and ending at



The Curvature Pen Tool is hidden behind the regular Pen Tool in the Toolbar.

the top (see screenshot). The tool will automatically create the curve in between the points. Next, we'll go to the Layer menu and choose Vector Mask > Current Path. This creates a mask that's based on the path so the outside of the spiral is now transparent. The last thing we'll do is create a Solid Color Fill layer to go beneath the spiral and we'll set that to black.



**Left: The Curvature Pen Tool is being used to create a path around the spiral. Right: After a vector mask was created, a Solid Fill layer was placed beneath the image layer.**

## Tips on creating spirals

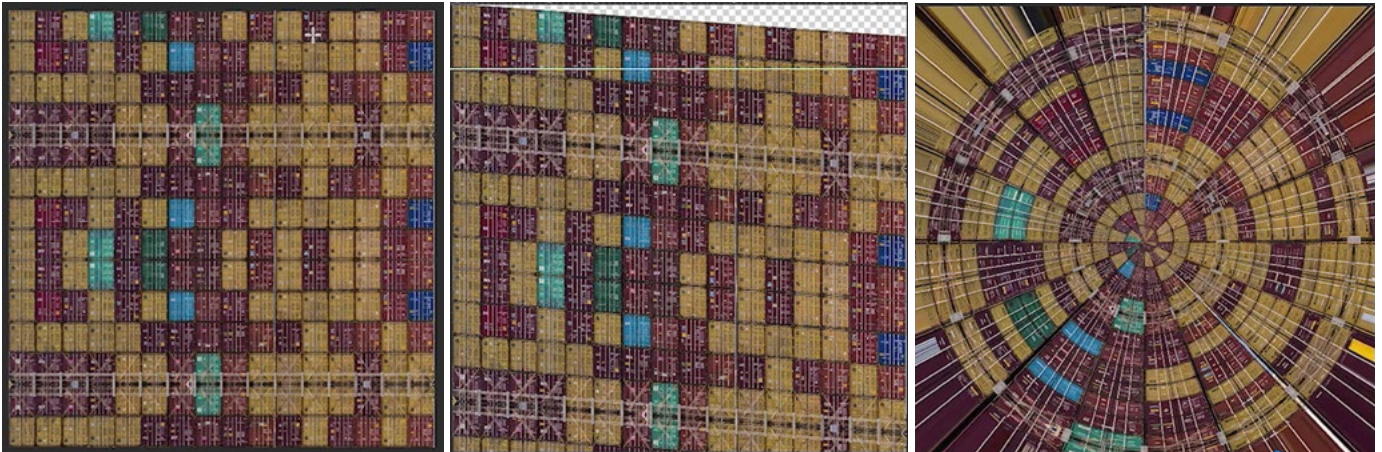
Images that are best suited for this kind of effect contain something that repeats itself with a horizontal orientation, where there is an equal increment between the objects in the image. Note that if your image contains subject matter that should be perfectly horizontal or vertical but isn't, you can correct for the distortion using the Upright feature in Lightroom or Camera Raw.

If you want your spiral to be perfectly circular, know that you will need to start off with a square document. If the document is rectangular, the spiral will end up being oblong, as it was in the previous example with the image containing rows of windows. In the next video example, we used an image with stacked shipping containers, duplicating a section of the image to create a square grid containing only



the shipping containers. We followed the same process as in the example above to skew the image, fill in the empty area and merge the layers together. Because the document is a square, the result of the Polar Coordinates filter is a perfect circle.

Remember that the filter is going to work on the active layer, so if your image is created from multiple layers, you'll want to merge those layers together before applying the filter.

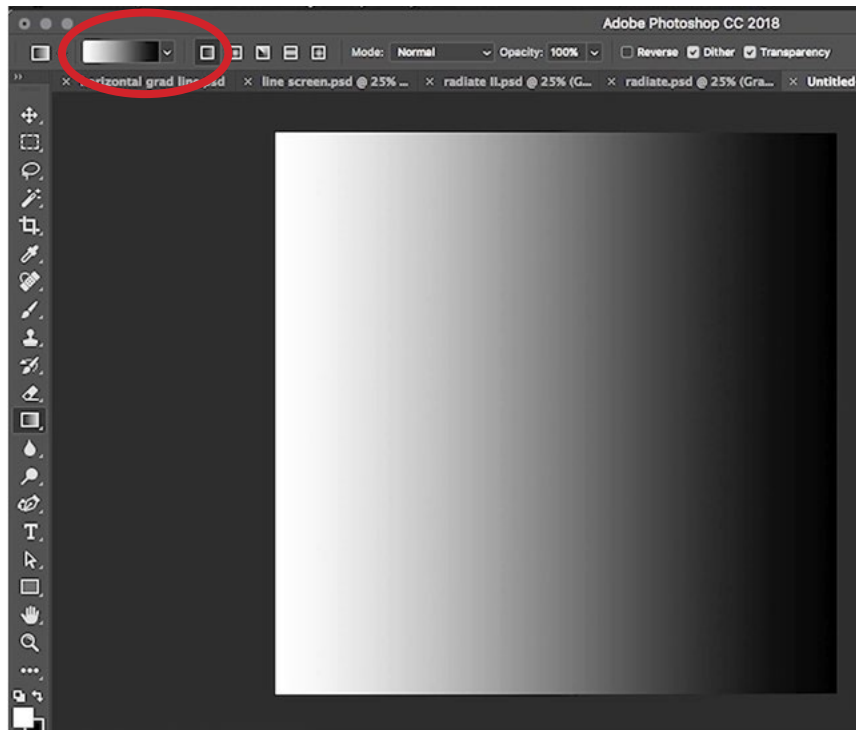


**The same technique as above was applied on this image of shipping containers. Because the image is a perfect square, the resulting spiral is a perfect circle.**

## Circular Graphic Effects

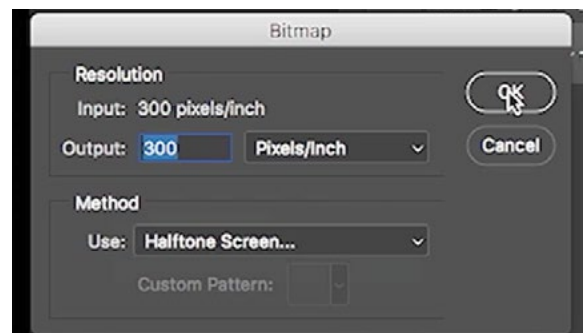
The Polar Coordinates filter can also be used to create some really interesting, circular graphic effects. If you ever come across an image that has this style of effect applied, you may be able to figure out how it was created by bringing it into Photoshop and running the Polar Coordinates filter with the “Polar to Rectangular” setting applied. This will basically do the opposite of the circular effect, where it will take something that’s circular and try to straighten it out. When you see what the straightened version looks like, you’ll know what kind of graphic was required to create the version with the circular effect. In all of the circular examples we have, we can see that they started as a series of lines that vary in thickness in some way. Let’s look at how to create these lines so that we can use them to make the circular graphics.

We'll start by creating a new document with square dimensions. In the video example, we used 7" x 7". Then, we're going to activate the gradient tool and use the settings in the Options Bar to choose the linear gradient style, going from white to black. We'll drag out the gradient, starting at the far left edge of the document and ending at the far right edge. (Hold the Shift key to drag out a perfectly horizontal or vertical gradient.)



**We created a Linear Gradient, going from white to black.**

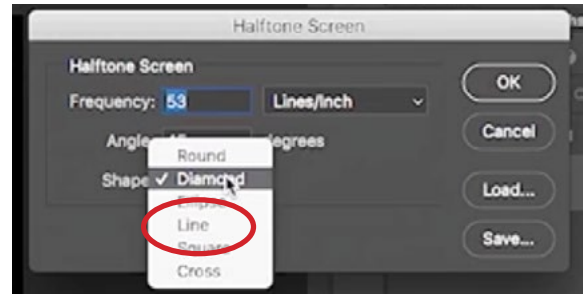
Next, we're going to simulate a half-tone effect, but in order to do this, we're going to have to change the mode of the image. We'll go to the Image menu and choose Mode > Grayscale. Then, we'll go back to the Image menu and choose Mode > Bitmap. (Note that the Bitmap option will only be available after the image has been converted to grayscale.) Photoshop will ask if it's ok to flatten the layers, and we'll click OK. A settings dialog will



**In the Bitmap dialog, we set the Use menu to Halftone Screen.**

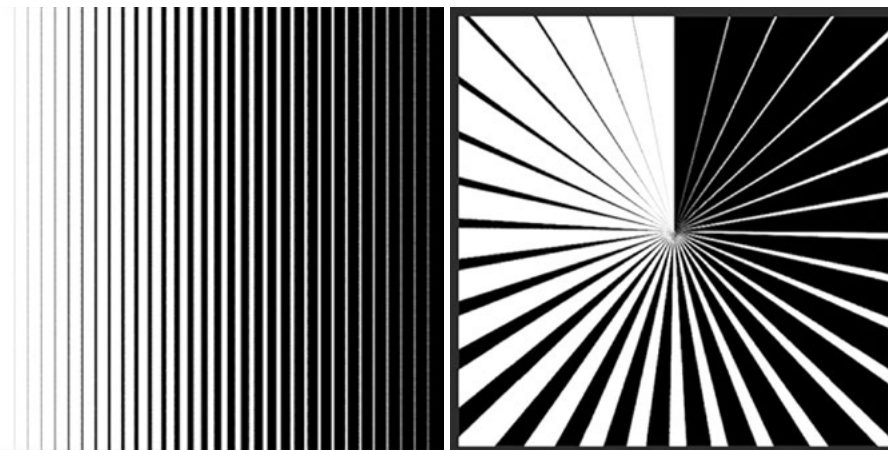
then pop up asking us to specify the resolution (we entered 300 pixels/inch) and the "Method." In a Bitmap image, you can only have solid black and solid white. The image can not contain any shades of gray. This "Use" menu under the "Method" section is where you determine what happens with the shades of gray in the image and how they should be rendered as solid black and solid white. The 50% Threshold option will take anything lighter than 50% gray and make it white, and

anything darker than 50% gray and make it black. The Pattern Dither option will create a speckled result. The Diffusion Dither option will create random specs that are more densely packed where there are darker shades and loosely packed where there are lighter shades. The Halftone Screen option uses circles or ovals to create the image. The Custom option allows you to create your own method.



**In the Halftone Screen dialog, we set the Shape menu to Line.**

We'll set the Use menu to Halftone Screen and then click OK. An additional dialog pops up, presenting us with options for the Halftone Screen. The Shape menu is where we determine what kinds of shapes will be used to create our bitmap picture. We'll choose the line option, which will create the image using straight lines that vary in thickness. The lines will be black and they'll be very skinny for the areas representing light shades of gray and they'll be fat for the areas representing the darker shades of gray. The Angle setting will determine the angle of the lines. We'll leave this setting at 90 so the lines remain perfectly vertical. The Frequency setting determines how many lines per inch there should be and we'll enter 3 here and then click OK. In the result, we end up with a white document that has black, vertical lines across the entire image. The lines are very thin on the left



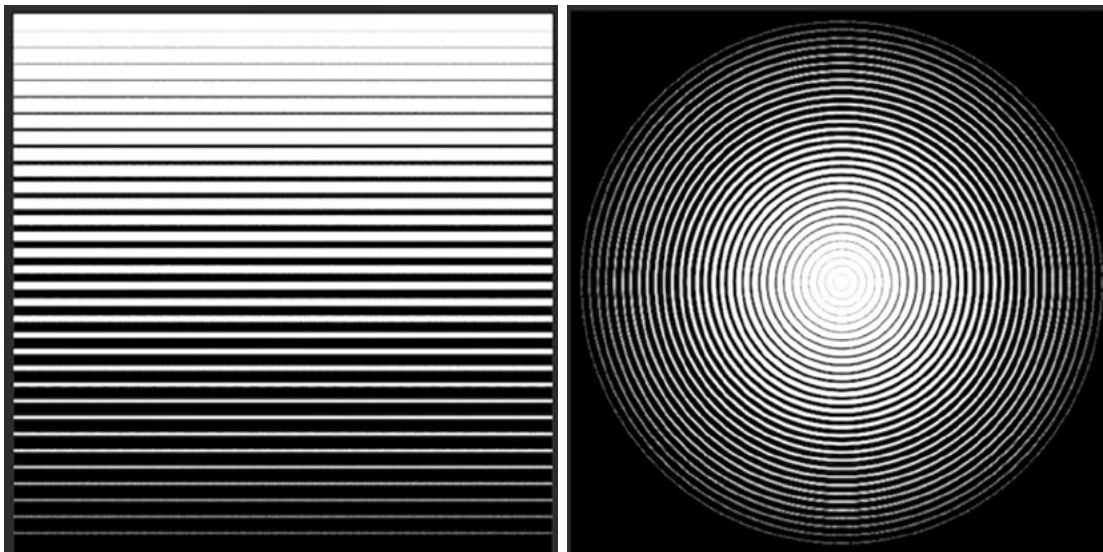
**Left: The Halftone settings resulted in this image with lines of different thickness. Right: The Polar Coordinates filter was applied to the image to achieve this effect.**

side and get progressively thicker the farther right they go. In the video example, we also tried this with a Frequency setting of 1, which created fewer lines but had the same effect. The resulting image is something we can feed into the Polar Coordinates filter to create an interesting effect.



It's important to know that Photoshop's filters are not supported when the image is in Bitmap mode, so before applying the Polar Coordinates filter to the image, we will have to go to the Mode menu and choose Grayscale.

After applying the filter to the image with vertical lines, we'll go to the Image menu and chose Image Rotation > 90 degrees. This rotates the image so we have horizontal lines instead of vertical lines. We'll apply the Polar Coordinates filter again, and you can see that we end up with a very different result. We end up with a series of circles that expand out from the center of the document, where the circles close to the center are very thin and the circles close to the document edges are very wide. If we want to get the opposite look, where the wide circles are in the center and the thin circles are near the edges, we would first flip the image vertically, switching the positions of the thin and thick lines. You can do this by going to the Image menu and choosing Image Rotation > Flip Canvas Vertical.



Here, you can see the result of the Polar Coordinates filter when applied to an image with horizontal lines.

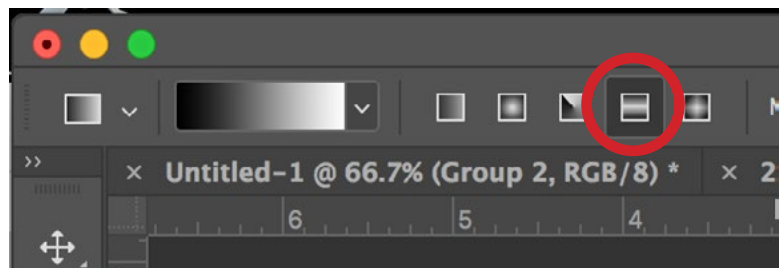


Flipping the document vertically (so the thick lines are on top) resulted in the opposite effect.



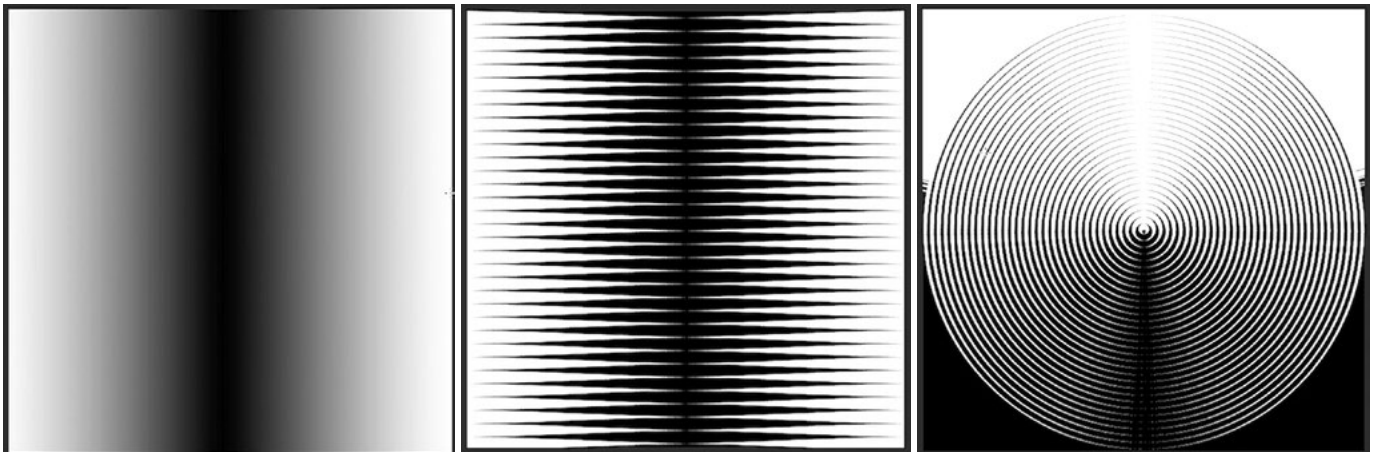
To create this effect, we started off with a gradient that had white on the left and black on the right. When converting to Bitmap mode, we chose the Halftone Screen option again, set the Shape to Line and set the angle at 0 degrees. This created horizontal lines instead of vertical ones. Then we applied the Polar Coordinates filter to achieve this result.

The other thing we can do to create different effects is change the gradient style. You can do this by clicking the different gradient style icons within the Options Bar at the top of the image window. In this example, we chose the Reflected gradient and turned on the Reverse check box, which swapped the colors. We then clicked in the middle of the docu-

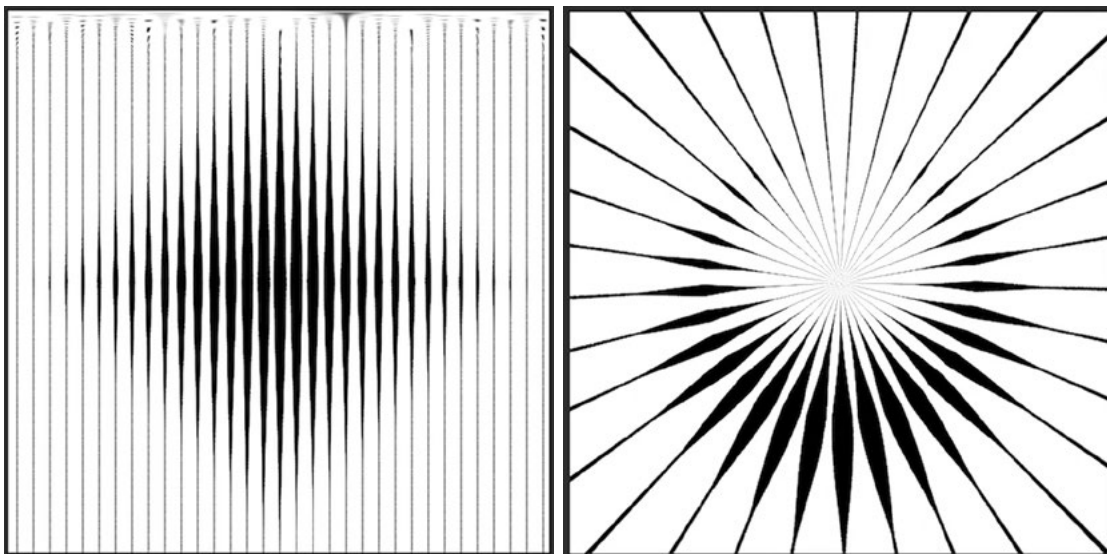


**With the Gradient Tool active, you can change the gradient style by clicking the icons in the Options Bar. In this example, we're choosing the Reflected Gradient.**

ment and then dragged to the right edge. This created a gradient that is black in the middle and white on the left and right sides. We followed the same steps to convert to Bitmap mode (using the Line option) and set the Angle to 0 degrees. Lastly, we changed the Mode back to Grayscale and ran the Polar Coordinates filter.



**Left:** The gradient we created using the Reflected Gradient Style. **Center:** The same document, after switching to Bitmap mode, using the Halftone Screen set to the Line option. **Right:** We applied the Polar Coordinates filter on the document to achieve this effect.



To create this effect, we used the Gradient Tool, set to the Diamond Gradient style, before applying the Polar Coordinates filter.