# Matching Tree Shadows to Ground Planes

The nice thing about 2D trees is the ability to modify shadows to depict virtually any lighting angle, and on most any type of surface form. Better yet, it's a fairly simple thing to do, as this tutorial attempts to demonstrate.

Things often appear easier than they are, but in this case the job is easy. The tree shadow shown here depicts an overhead light source. At first glance, creating the shadow seems tricky. Using an image editor's "drop shadow" effect simply won't produce this look. That means you have to paint your own, but painting shadows with perspective isn't all that easy.

Painting your own tree shadow does offer more creative flexibility, and it's easy if you use the techniques demonstrated here. It's not really necessary, though. All you really need is a round shadow layer to work from. If you don't have one, you can use one of ours. After that, you can simply apply the same technique to the ones you paint yourself.

If you want to learn how to paint your own shadows, download the ShadowPaints.zip. It contains a shadow nozzle, tube and image-list. These work as specific paints, so you'll need Painter, Paint Shop Pro or Photo-Paint brushes to use them. Our *Painting Shadows* tutorial shows you how to paint the rounded tree shadows referenced here.

Finally, this tutorial uses Photoshop as the default image editor. You don't need Photoshop to do this tutorial, however. Most any 2D image editor will do because most now have the same tool sets and use the same command names. Still, it's easy to get confused so we included command reference guides for Paint Shop Pro, Painter and Photo-Paint as well. So let's go.

1) Download the pre-painted shadow file (Shadow.PSD) and open it in your preferred 2D image editor.

To make visualization easier, I've brought my painted shadow (small center inset) into the tree image I plan to use it with. The idea is take my round shadow and deform the angle so that it matches a ground plane relative to the tree angle of view. My example doesn't use a terrain surface, but you could as easily match the shadow deformation to the contour and angle of an existing Terragen or MojoWorld ground plane.

2) Make the shadow layer active and select Edit > Transform > Distort command. If you prefer, use Ctrl+T to activate Free Transform and hold the Ctrl key down while moving the grabbers.

Paint Shop Pro uses a Deformation tool (right) located on the Tools palette. It does the same thing. Hold the Ctrl & Shift keys down while dragging the grabbers. (The shadow layer must be active for the tool to work.)

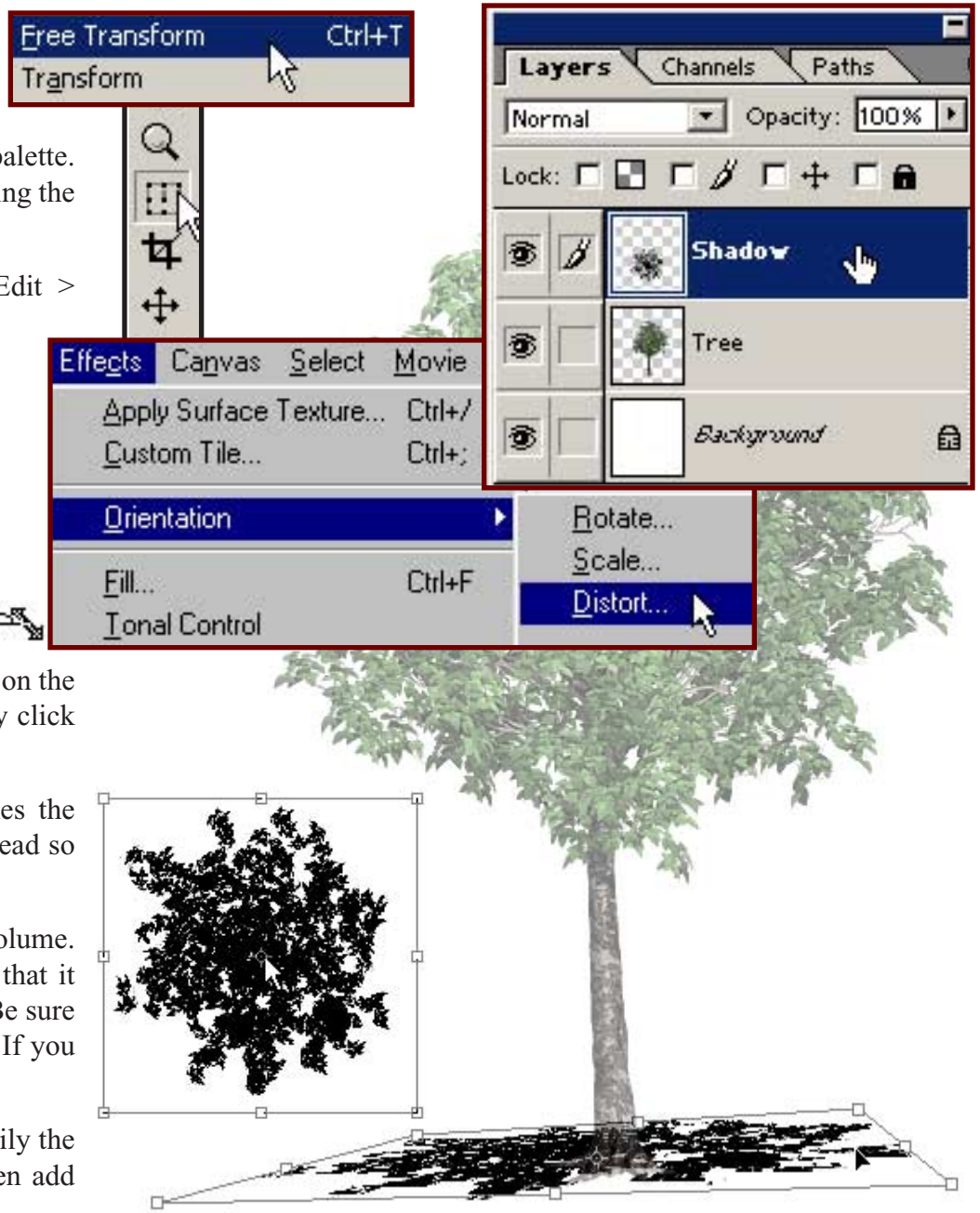
Painter's Transform isn't as flexible as the others, so use the Edit > Orientation > Distort command instead (shown at right).

Photo-Paint's command is Objects > Transform > Distort). Clicking on the image layer (object) changes the transform controls as well. Simply click until the diagonal arrows appear, then drag to distort (see above).

3) Drag the grabbers to squeeze the round shadow until it defines the ground plane beneath the tree. Remember, the light source is overhead so the shadow will fall beneath the tree.

Remember, the idea is to trick the eye into seeing the tree as having volume. That's achieved by distorting the roundness of the tree shadow so that it depicts the shadow as it would appear on the ground in front of us. Be sure the front is wider than the rear because that adds more perspective. If you want a more elevated point of view, simply lessen the squeeze.

We've added a slight slope to our ground plane just to show how easily the shadow can match a MojoWorld or Terragen terrain. You can even add bumps and dips with a little extra effort.



4) Light sources from lower angles create a different kind of shadow. They're elongated and the trunk is visible. So when you post process trees with a MojoWorld or Terragen terrain you have to address this shadow in much the same way a 3D program would using a 2D tree texture.

Because this kind of shadows falls away from the tree, it usually represents some distortion of the tree as it otherwise appears in the image. You can think of these shadows as a silhouette of the tree that has fallen flat on the ground.

Painter or Photo-Paint will create this kind of shadow automatically, and as a layer. The Painter command sequence is Effects > Objects > Create Drop Shadow. Painter then groups the shadow layer with the tree layer. You will need to open the group and select the shadow to distort it.

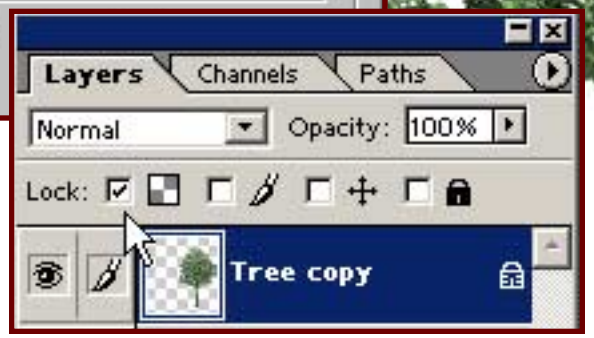
Photo-Paint simplifies the process even further. When you choose Objects > Drop Shadow, a palette appears. The Perspective button lets you choose how to distort the shadow before you even create it.

Conversely, Photoshop and Paint Shop Pro users need to "duplicate" the tree layer because PS & PSP shadows aren't really layers. It's not a problem. You just fill the new layer copy with black. If the edges need softening, use one of the Blur filters.

If you're using Photoshop, be sure to check Lock Transparency for the duplicate layer or you will fill the entire layer rectangle rather than just the tree.

Paint Shop Pro users don't need to lock layer transparency, but be sure to use a high Tolerance setting on the Fill palette or the tree won't fill correctly.

There's one more trick and it's visible here. Notice how the shadow isn't uniformly flat? It has the irregular contours of ground. This simple trick lets you match shadows to terrains surfaces.



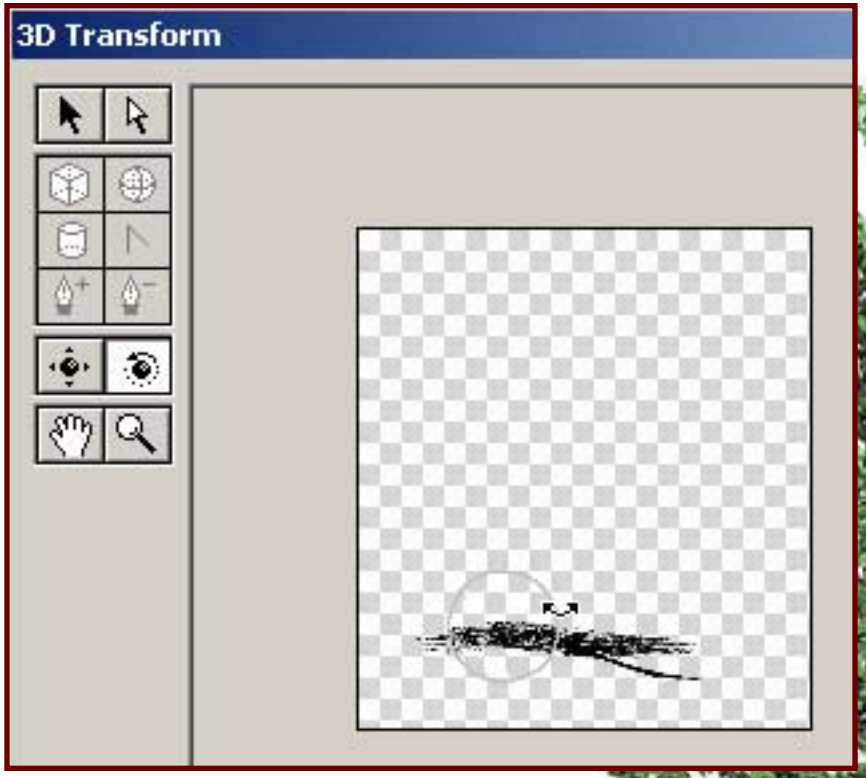
5) This last distortion uses the image warp filters found in all of these programs. In Photoshop, it's the 3D Transform filter. Choose Filter > Render > 3D Transform.

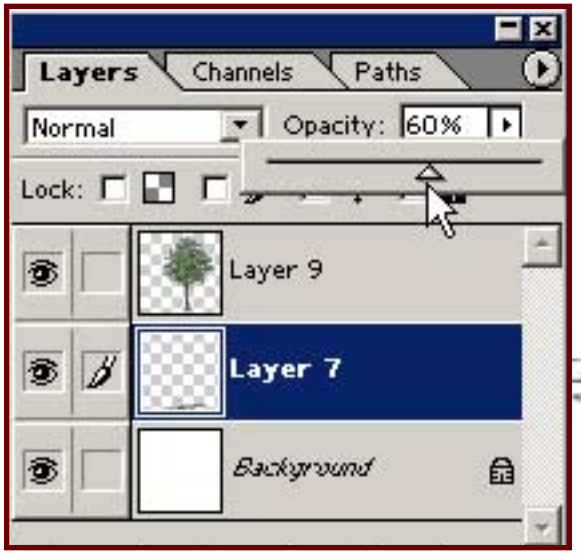
In Painter, select Effects > Surface Control > Quick Warp.

Paint Shop Pro's warp filter is found using Effects > Geometric Effects > Warp.

Photo-Paint users will use Mesh Warp on the Effects > 3D Effects menu.

They all do pretty much the same thing. Generally, the spherical setting will offer the most realistic results. In the example below, I applied spherical distortion to three different areas of the shadow to create the irregular surface.




6) Finally, be sure to lower the layer opacity when you're finished.

One more time, only more succinctly,

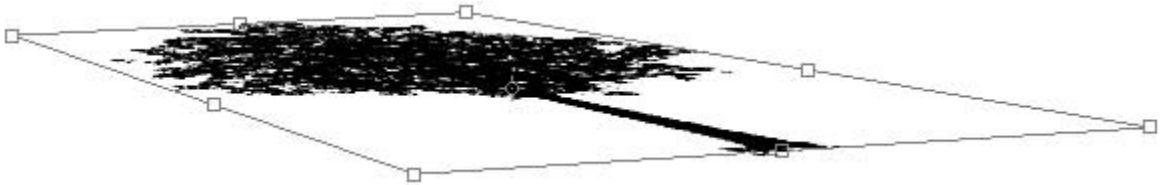
1) Download the pre-painted shadow file (ShadowFile.zip) and open the file in a 2D image editor like Photoshop, Paint Shop Pro, Painter or Photo-Paint.

2) Make the Shadow layer active.

3) Select the Transform > Distort command or use PSP's Deformation Tool and hold the Ctrl+Alt key down.

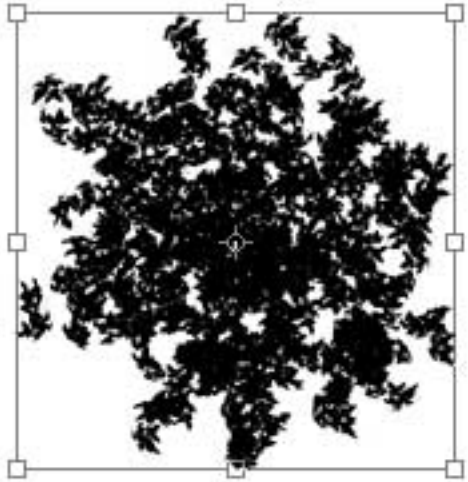
4) Drag the grabbers and squeeze shadow until it defines the ground plane beneath the tree. Remember, the light source determines how the shadow will fall beneath the tree.

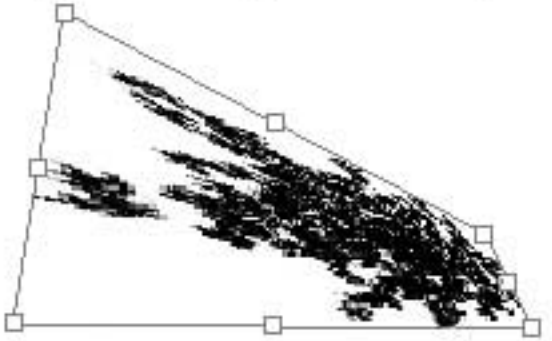
Remember, light sources from lower angles create a different kind of shadow.



5) Use the image warp filters found in all of these programs to create an irregular, realistic ground plane that matches your terrain render.

6) Finally, lower the layer opacity and have fun.





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