CHAPTER 6

INTEGRATING 3D OBJECTS INTO A PHOTOGRAPHIC SCENE

IN THIS CHAPTER
- Use 3D models from different programs in CS5
- Create workflow UV maps in your 3D program
- Edit the 3D model’s surface with photographic images
In this chapter, we will create the concept called Pursuit. Pursuit will illustrate a pilot in a spaceship, who is desperately trying to escape the pursuit of another ship. This exercise will demonstrate the flexibility of CS5 to use 3D content from multiple programs and combine that content into a singular vision. We will call upon several traditions of 3D (photographic and painting) to produce the final result. Keep in mind that this image was originally created at the request of Photoshop User’s Magazine and what you are about to explore is my original vision. However, sometimes publishers like to add a few adjustments of their own to suit what they feel will work best for their publication, and you will see the end results of that change at the end of this tutorial. For now, let’s go have some fun.

Two 3D programs were used to create this tutorial. One is Smith Micro’s Poser 8 (http://poser8.smithmicro.com) and the other is NewTek’s LightWave 3D 9.6 (www.newtek.com). The images have been provided for you in PSD files in the Tutorials/ch 6 folder called “flier.psd” and “pilot.psd.” By now, you should have downloaded all of the contents onto your desktop into a folder called “tutorial.” So feel free to use those images to follow along with this tutorial.

**3D CONTENT LIGHTWAVE**

Let’s take a look at the 3D models that were used to complete this tutorial. Figure 6.1 displays the completed version of the 3D ship within the LightWave interface.
I created the ship using the basic rectangular primitives and sculpted the basic shape of the ship. Afterward, I applied subdivision surfaces, which is a command that will round out the corners toward a more organic shape, as shown in Figure 6.2. When the overall design was completed, I designed a simple cockpit where the pilot could be placed, as shown in Figure 6.3.

Just like Photoshop, LightWave utilizes layers to place individual objects into the scene. So additional details were added to add a little more interest, such as the pilot’s chair, steering wheel, and viewing panel. In addition, UV maps were assigned to the surfaces of the individual components to add the textures that you might want to use later in Photoshop (see Figure 6.4).

Now, let’s take a brief look at Poser.
A QUICK LOOK AT 3D CONTENT IN POSER

Poser is not a modeling program. It is a posing and animation program that uses predesigned characters, which will be ideal for this exercise. The pilot in the aircraft is escaping another ship in pursuit. The ship’s wing will be hit by a laser blast, and fire and smoke will emanate from it. The pilot’s face is designed to display angst. I used the Poser 8 Ryan character.

I began by designing facial emotions by using the Morph properties to apply a series of angry and pain emotions, as shown in Figure 6.5.

Then I created the pose in Figure 6.6. Next, the character is posed to fit in the reclining chair of the cockpit.

As mentioned earlier every 3D object has to have a UV map applied in order for Photoshop to recognize it in its 3D layers. You can access the UV map in the Materials room as shown in Figure 6.7. All of Poser’s 3D content will already come attached with UV textures, as shown in the close-up view in Figure 6.8. You can export the model as an OBJ using the “Poser Photoshop Content Exporter for Windows,” which you will find for Windows or Mac on my Web site at http://www.chromeallusion.com/tutorials.html. Install it on your machine. You will find the command in Poser under the Script > Export CS3 OBJ. This will export the 3D object and all textures in to your chosen folder. LightWave and Photoshop alike can import the Poser character imported earlier from Poser 8.
FIGURE 6.6 View of the pilot posed for the reclining chair.

FIGURE 6.7 View of the pilot’s UV map.
CREATING THE BACKGROUND

The ship in the foreground will be running from the one on the background underneath the overpass architecture. I wanted the scene to have dynamic composition so I created a single-point perspective and placed the bridge underneath to view how it conformed to the custom perspective, as shown in Figure 6.9. As you can see, the lines of the bridge do not conform to the perspective so that will have to be altered next.

Portions of the bridge were cut and pasted into a new layer. I used Free Transform (Ctrl+T/Cmd+T) and Warp (Edit > Transform Warp) to conform the bridge to the perspective lines (see Figure 6.10).

When reshaping the bridge was complete, a Color Overlay of the bluish tint of the night sky was added using the Layer Styles dialog (see Figure 6.11). This tinting helped conform the lighting of the overpass to the night sky.

Several 3D objects of buildings were created in LightWave and placed as secondary compositional elements in the lower left-hand corner (see Figure 6.12). You can get the objects from tutorials/ch 6 3D city.psd. These objects add some interest in the background and help add to the story. In addition, I used Photoshop’s primitives to create a 3D plane (3D > New Shape From Layer) to work as the surface for the buildings, and then I placed the base of the buildings on the horizon of the ground plane. The buildings were placed into two layer groups titled “3D buildings with lights” and “3D buildings with lights 2.”
The opacity for “3D buildings with lights 2” was reduced to gain some depth. Next, point lights were added to the top of the antennas and placed in the layer group titled “lights.” Let’s move on.
Creating a new layer above the 3D buildings, the paint brush was used to paint in a yellowish haze to add some atmosphere to the scene (see Figure 6.13). I used a soft-edged brush for this.
ADDING LIGHTING TO THE SCENE

Lighting is added to the underpass by creating several layer groups that represent the area of focus. You can easily use a single layer if you like. I did this for better control. The Layer Blend mode of each layer was set to Color Dodge so that the color illuminated the structure. I created a red and yellow glow on the edges of the overpass by hand painting onto it with a soft-edged brush. Next, I added some greenish glows to reflect the fluorescent light that I will create in the next example. Figure 6.14 shows the Brush properties that were used as well. As you can see, it is a simple soft brush.

![Figure 6.14 Colored lighting is painted onto the overpass.](image)

I created the fluorescent lighting using the same technique shown in Figure 6.15. I just drew in the linear light shapes on a layer that was set to the Color Dodge Layer Blend mode. I then added the light as greenish glows to the inside of the pillars to simulate the light spill off. Let’s go add the 3D models to the scene.
CREATING THE BACKGROUND

Now here comes the really fun stuff—3D in Photoshop! I imported the ship from LightWave and the pilot from Poser 8 (see Figure 6.16). I used Poser 8 to export the pilot as a LWO (Lightwave 3D object) object and imported him into a layer in LightWave and positioned him into the chair. Now that all of my objects are together, I exported them as an OBJ into the folder where Photoshop could import them.

The 3D ship is imported into a 3D layer via 3D > New Layer from 3D File. In the layers palette, you will see the surface textures listed as they were shown in LightWave.

When I double-click on the “cockpit rim bump” texture layer, I will see the UV Map that produces the stippling surface of the cockpit. Bump maps only work off black-and-white values. Medium gray causes no effect, white produces peaks lifting away from the surface, and black values produce valleys moving below the surface. Figure 6.17 shows how I textured the cockpit using those values where the back grid produced the indentations in the cockpit.
FIGURE 6.16 LightWave model imported into Photoshop.

FIGURE 6.17 View of the bump map for the cockpit.
By double-clicking on the “body ship” texture, the UV map is displayed representing the ship’s color surface (see Figure 6.18). I chose to texture it using a photograph of dilapidated metal with fading yellow paint. Using Free Transform (Ctrl+T/Cmd+T), I resized it to elongate the scratches along the length of the body to show that the forward motion of the ship produced linear wear (see Figure 6.19). Figure 6.20A displays a close-up view of the top portion of the ship where I added pinstripe details on the wing.

I did not just restrict myself to working on the UV Map. Photoshop CS5 also gives me the ability to edit the texture directly on any surface of the 3D model, as shown in Figure 6.20B. So I used the Stamp tool to clone additional textures on the surface. I made sure that the “Paint On” option in the 3D panel was set to “Diffuse” so that the painting effect only affects that channel.

For the final touches, I added a bump map where the rivets are painted with white dots so that they protrude forward, and the paneling is painted with black to show separation. I made the initial drawing on the Diffuse map and then renamed it as “body ship bump.” I then imported it into the bump channel (see Figure 6.20C). I began working on the UV map directly at first, but later I painted directly onto the model making sure that the “Paint On” option was set to “Bump.”

**FIGURE 6.18** View of the UV map in Photoshop.
Next, the ship is placed into the topmost layer of the underpass scene and composed so that it is flying out toward the viewer from the lower-left corner of the frame. This is also a good time to merge the layers used to produce the background to conserve on memory. Graffiti is added to the pillar walkways to add some human interest.
Using Your Texture Library

It’s important to build up a library of textures of all types because you never know when you will need a particular type of image. I simply chose shots from my graffiti library that I documented over the years. I can’t say enough about always carrying your camera to record textures that could be useful for 3D texturing.

Then the images were Free Transformed to match the size and perspective of the concrete face. I altered the Layer Blend mode to Hard Light and lowered the opacity to integrate the texture into the scene more effectively. Use Figure 6.21 as a guide.

FIGURE 6.21 Place 3D ship into the underpass scene.

Now, I played with the 3D lighting to create some cross lighting from the left side of the ship (see Figure 6.22). As you start to complete your digital painting, you will want to experiment as much as possible with the quality and color of light that will make the 3D object integrate with the scene more believably.
CREATING SMOKE AND LASERS

The ship has been hit on one of its wings from a laser blast from behind. Figure 6.23 shows the Brush options that I used. I simply used a soft-edged brush and altered its Scattering properties to create the main effect of the brush. The Other Dynamics option was set to “Pen Pressure” so that I could adjust the opacity of the smoke. With my foreground and background color set to Black and White (D), I alternated between the two colors (X) to paint in white or black smoke coming from the surface of the wing. I included a brush called “smoke brush.abr” for your use in the Tutorials/ch 6 folder. Just load it by using the Load Brushes command through the Brush submenu and chose Append to add the brush to your existing palette.

To create fire, apply red or orange colors into the smoke, as shown in Figure 6.23. To get the Glow effect, change the Blend Mode of the brush to Color Dodge and watch the fire glow over any area to which you apply the brush. I made sure that the color used to paint with matched the color of the area that I would apply it to. Next, Puppet Warp (Edit > Puppet Warp) is used to transform the smoke.
This is one of the new Transform tools in CS5 that I feel will be a favorite among users. It works well here to allow you to shape the direction and flow of the smoke in any direction that you choose.

Now to create a series of laser blasts, I used a simple circular shape created with a soft-edged brush. Start with a rich color on the outside and then apply lighter colors on the inside using a soft-edged brush. When completed, I used the Layer Styles dialog to apply an Outer Glow to the shape (see Figure 6.24). When done, it is elongated into a thin laser-like shape, as shown in Figure 6.25.

I finally added a ship or two to experiment with the placement, in order to accentuate the action in the scene. In addition, the laser was duplicated and adjusted to match the perspective of the shape traveling from the background toward the foreground. One laser hit the wing (see Figure 6.26).

For finishing touches, I felt that the colors were too independent, so I added a gradient with green on top and yellow on the bottom to blend all of the colors more harmoniously (see Figure 6.27). I changed the Blend Mode to Screen and added a layer mask to allow only select elements to come forward with their original color.
Chapter 6   Integrating 3D Objects into a Photographic Scene  

**FIGURE 6.24** Initial start for the laser.

**FIGURE 6.25** Elongate the shape.

**FIGURE 6.26** Place additional ships and place the lasers.
That’s it. Figure 6.28 displays the final view with a little extra added smoke, contrast, and the background darkened to bring out the ship visually toward the foreground.

As you can see, *Photoshop User’s Magazine* chose to flip the image to lead the eye into the pages. Figure 6.29 shows the cover shot of the image.
WHAT YOU HAVE LEARNED

- CS5 will accept any 3D object from any program as an Obj.
- You can apply lighting techniques using Layer Blend Modes.
- You can conform your scene to a custom perspective.
- UV maps created in a 3D program will be recognized in CS5’s 3D texture layers.
- Puppet Warp is a very reliable tool for transforming smoke.