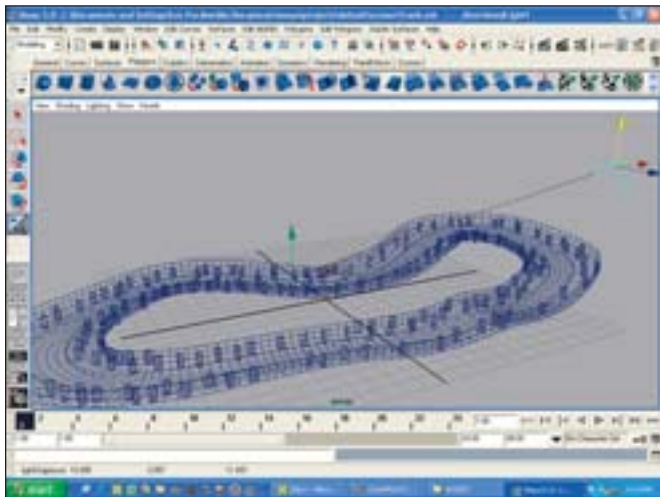


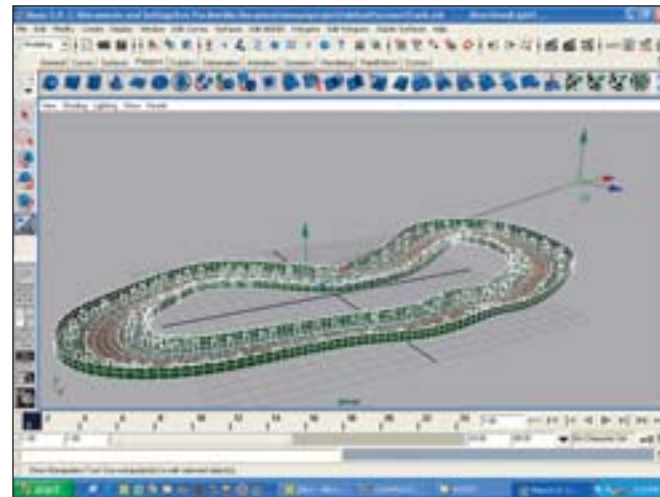
## Prelighting the Racecourse

As you learned in the previous chapter, the higher the model's resolution, the better prelighting will work. Now that you have a higher-resolution version of the model, you can set up the lighting. If you want more detail in the lighting you can subdivide the model further. Just remember that game engines have polygon limits, so be careful how many times you subdivide.

1. Create a directional light. Set the intensity to 5 and make the light a little yellow.
2. Adjust the position of the light so it shines on the course from an angle, as shown in Figure 7.49.
3. Select the light and the entire model, as shown in Figure 7.50.
4. Prelight the model with the same setting you used to prelight the room in Chapter 6. Figure 7.51 shows the model after prelighting.



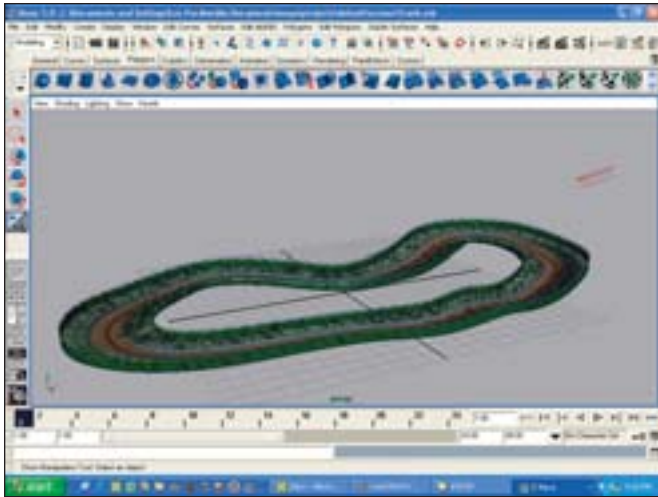
**Figure 7.49** Put a directional light in the scene.



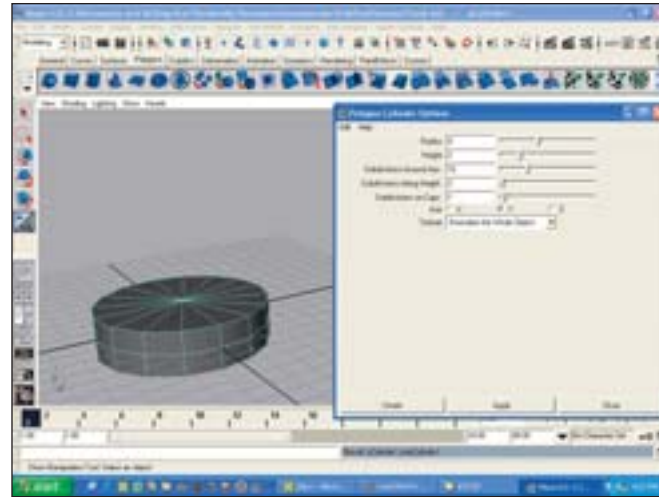
**Figure 7.50** Select all scene elements.

## Building Skyboxes

A *skybox* is a model used for the sky and distant terrain features. It is a separate model from the racecourse, and it is rendered differently than the racecourse model. The game engine renders the skybox last, after everything else is finished rendering. This keeps the distant terrain features in the back, behind the rest of the course. Because it is rendered last, you don't need to build the skybox large enough to cover the entire course. In fact, most skyboxes are relatively small compared to the world geometry.



**Figure 7.51** The model after prelighting



**Figure 7.52** Create a cylinder.

You will build a simple skybox for the racecourse. Hide the current scene so it will be easier to work on the skybox.

1. Create a polygon cylinder, as shown in Figure 7.52.
2. Delete the top and bottom faces.
3. Apply the horizon material using the Cylindrical Mapping tool, as shown in Figure 7.53.
4. Create a polygon sphere slightly larger than the cylinder, as shown in Figure 7.54.
5. Go to the Side view.
6. Delete the lower five rows of faces from the sphere.
7. Apply the sky material using the Cylindrical Mapping tool, as shown in Figure 7.55.
8. Turn on backface culling to see the inside of the skybox. It should look like Figure 7.56.

The skybox is now finished. Figure 7.57 shows how it will work for the horizon of the game.

For this example you used a clear blue sky and a mountain horizon. You can experiment with different sky textures and horizons to get different looks. Some games have very complex systems for developing skyboxes, including cloud-generation programs and the movement of the sun across the sky.

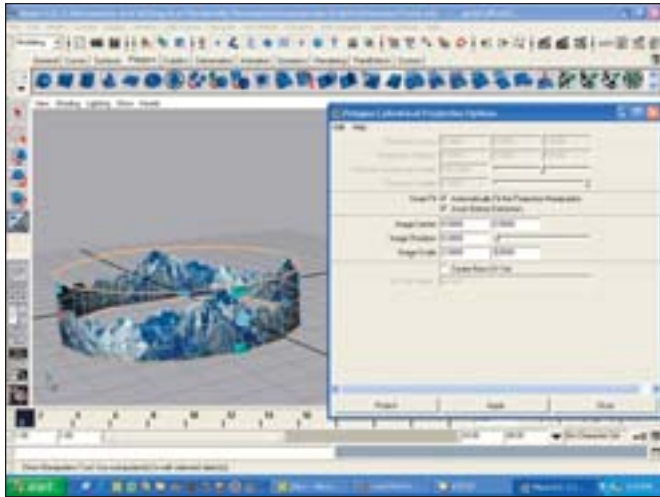


Figure 7.53 Apply the horizon material.

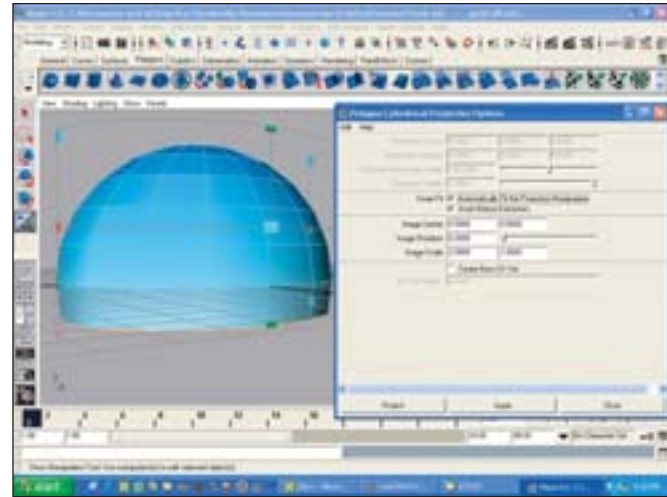


Figure 7.55 Apply the sky material to the sphere.

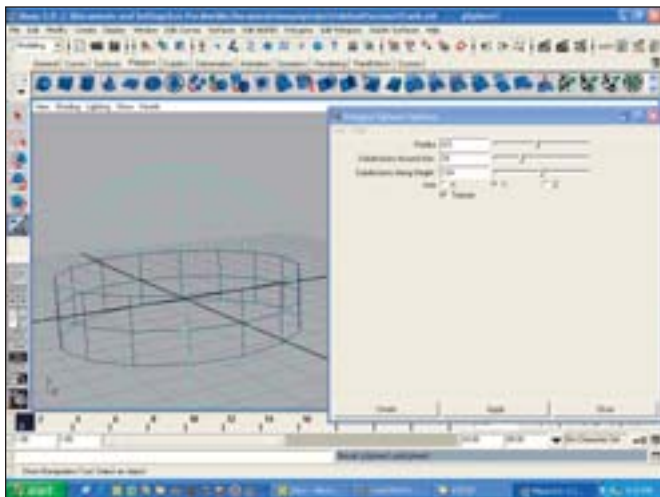


Figure 7.54 Create a polygon sphere.

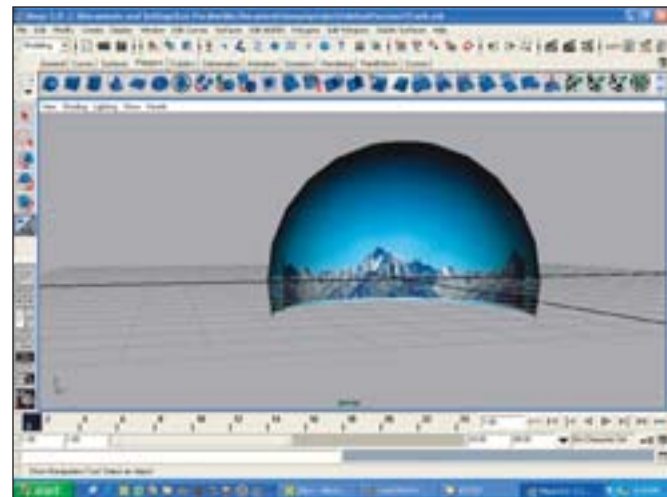


Figure 7.56 The completed skybox



**Figure 7.57** The skybox horizon



**Figure 7.58** View of the finished racecourse

## Summary

Congratulations! You have just finished building a racecourse. Figure 7.58 shows a mockup of how the racecourse will look in a game.

In this chapter I covered some very basic NURBS modeling techniques. As you can see, NURBS modeling is a very powerful way to create models. Continue to experiment with NURBS to see other ways in which they might be helpful in your modeling efforts.

I also covered techniques for building specialized terrain models, such as racecourses, as well as level of detail and building skyboxes. Many of the techniques you learned are used in other types of games too, such as adventure games and first-person shooters. Try to build some other environments using the same techniques.