CHAPTER 6

The Robot Head

Okay, I realize that I am about to get geeky again, but I want you to think about all the robots you have seen in films. You will realize that most of them have heads that reveal something about their character.

In my earlier book I talked about how to create a wireframe for what you want to build. A wireframe involves planning a LEGO Technic project with a crude outline and then “thinking” in LEGO so you can make it work. In Chapter 2 of this book, you learned how to make certain shapes such as triangles, squares, and rectangles to help you create a robot body.

This chapter will show you how to create more curvaceous forms so you can create one of the most important parts of the robot—the head. If you think about robots in films, the ones with more curves to the face seem to look more human and therefore create a sense of familiarity. Think about C-3PO and R2-D2 from *Star Wars*, who have round and oval faces. Immediately these loyal droids stole our hearts in the first *Star Wars* Trilogy. In the prequel trilogy, the “bad guy” droids had flat and angular heads, as if they were manufactured for only military might the bad guys. Similarly, the Cylons from both versions of *Battlestar Galactica* were angular and triangular.

Granted, the humanoid exoskeletons from the *Terminator* films looked quite human, but their skull-like faces brought about a sense of fear. You have to think about what you want your robot face to convey. If you want people to love to hate your robot’s face, then go with a villainous look.

I will also show you how to create a head for your robot and how you can “bring it to life.” The three projects in this chapter will show you how to create a robot head complete with a moving mouth and even eyebrows.

You could make your robot’s head smaller, I’ll leave that up to you. The purpose of this is to show you how to make more curves, so you can get an idea of what to do when building your robot head. The robot head discussed in this chapter with Projects 6-1 to 6-3 will be slightly large in comparison to the robot body I showed you how to build in Chapter 3 of this book. The reason why I went with such a large robot head is so you can learn how to create a robot head with very human-like features and details. If you actually have enough pieces to create a LEGO Technic body to scale with this head, knock yourself out.

Before I get into building a robot head, I want to discuss how to replicate the curves that are part of the human head.

Circles, Curves, and Other Round Shapes

There is a motto LEGO builders use that I often see emblazoned on many T-shirts: Square Is Cool. I admit that it is much easier to work with right angles and even the triangles, which I discussed in Chapter 2.

It really isn’t possible to make a circle using the current LEGO Technic parts, but there are ways around this. For example, if you link several #3 Angle Elements together with 2M Axles, you will get something that looks like a circle, as shown in Figure 6-1.
Figure 6-1. What do you get when you cross sixteen 2M Axles with 16 #3 Angle Elements parts? A circle

Figure 6-1 is actually a 16-sided figure, or hexadecagon, but I find that it does not fit well with certain figures. There is a distance of 2M between each round hole, provided they are close together, and you can bridge them with a 4M Lever and two Connector Peg/Cross Axles. I couldn’t find a way to bridge any other hole with another hole. You can adjust the size of your hexadecagon by adjusting the size of the Axles, which increases the distance between the round holes.

If you use eight 2M Axles and eight #4 Angle elements you can produce a good looking octagon, as seen in Figure 6-2.

Figure 6-2. How to create an octagon using #4 Angle Elements