

I. GETTING INTO SHAPE

Understanding and Evaluating Shapes in Real-World Objects

All things are made of shapes of one sort or another. Most things are made up of a combination of shapes. A baseball resembles a sphere. A can of tomato soup resembles a cylinder. A tire resembles a disc that has thickness to it. Since you are going to be responsible for designing your own “world”, understanding how to design your objects will be of utmost important.

“START SIMPLE AND ADD DETAIL”

We’ll be learning the basic shapes available to you in the upcoming chapters. We will have to modify these basic shapes and re-design their structure into the objects we want. We’ll take a box and make it into a simple car. Or you can take a sphere and shape it into a simple head shape. Yet shapes or objects are only a part of the overall picture when working on a project.

Every animated project that has been created starts with a story and an object. The telling of a story is usually accomplished through the actions of an object. Since the “story” aspect of animation can be covered in scriptwriting or English classes, I will not discuss that here. We will focus on the objects in animation.

Certainly you are familiar with Mickey Mouse. His first public appearance was made in 1932 when he debuted in “Steamboat Willie.” In this animated short, the major objects that appear are Mickey, the steamboat, the river, and the boat captain. Each object interacts with one another to create a visual story. For every frame of animation that was completed, many animators spent numerous hours sketching every important detail into their drawings. With their pens and pencils, the animators were given the task to reproduce “reality” onto film. The concept started here; that it was possible to look at something in our world and reproduce it in another way, whether on paper or film or even inside of a computer. Look around you. What do you see? A desk? A person? A tree? What are their shapes? Round? Boxy? Oval? Symmetric? What are their sizes? Large? Small? And what colors are they? Brown? Blue? Green? Start to evaluate the shapes, sizes, and colors of the things that you see.

Using 3D animation software such as Lightwave 3D, you will be able to use simple shapes to design your object. Section III will cover this in more detail. These simple shapes that you have to start with are a box, a ball, a disc, a cone, and some other shapes. In the third dimension, these shapes can easily be made into a rectangular box, a sphere, a cylinder, and a 3D cone respectively. In time, if you apply yourself in this area, you’ll be able to modify any of these shapes to form whatever object you like. It will take time, though.

Introduction to POLYGON MODELING

Among the more popular 3D animation software packages there are a few methods in which models are generated. The top three methods are using Meta-nurbs, B-Splines, and Polygons. In this class we will be discussing Polygons since, in Lightwave, models are created using Polygon Modeling. Polygon Modeling is a very basic way to creating objects and most software packages have this ability.

The basic concept behind polygon modeling is that connecting three or more points together will create a polygon. **Figure 1A** shows a polygon consisting of four points, otherwise known as a quadrangle. By itself it can form a planar object like a floor or a flat side of a wall.

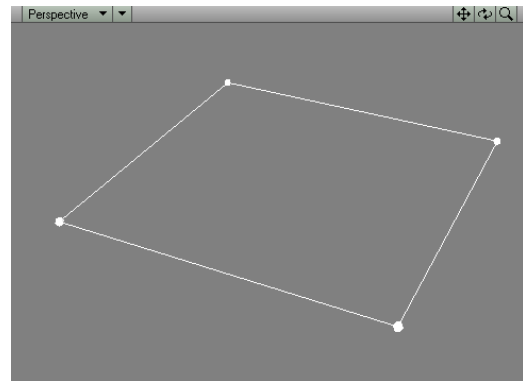


FIGURE 1A.

If you add more points and connect them with the existing points, you will create more polygons. Repeat this with points in various 3D positions and you will start to create a three-dimensional object, as in **Figure 1B**. Remember, three points connected together form a triangle and four points connected together form a quadrangle. But both are considered polygons.

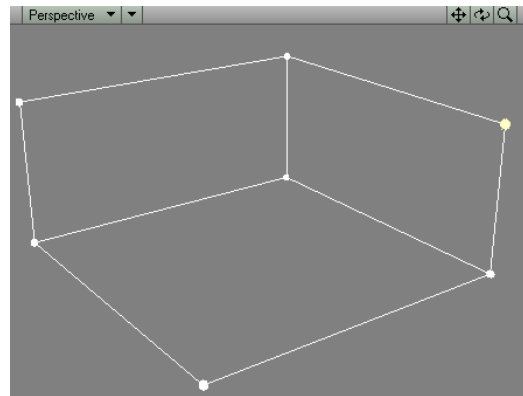


FIGURE 1B.

Every polygon that is created is given a surface name. By default, the surface name is DEFAULT. But you can select individual polygons and rename the surfaces to whatever name you wish to describe it better. Each surface can have its own color, as shown in **Figure 1C**.

Surfaces will be discussed in a later Section.

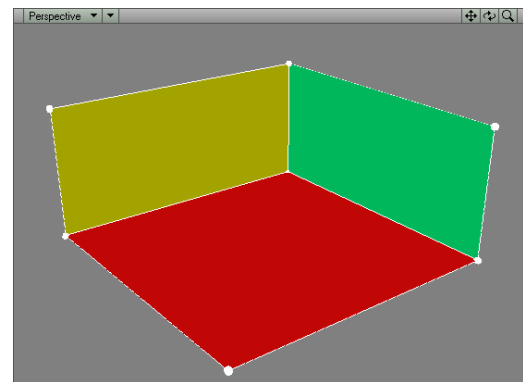
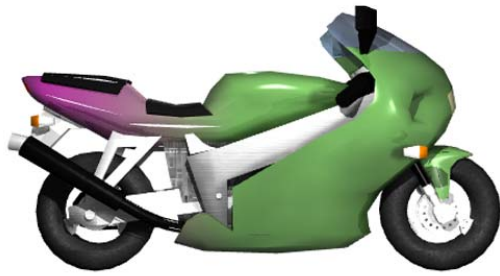


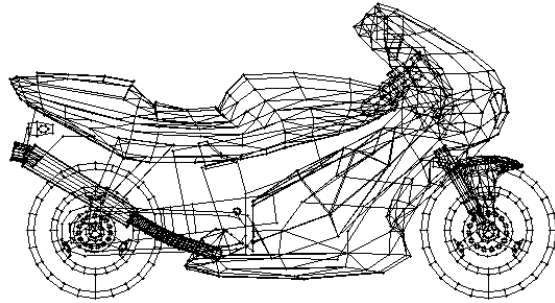
FIGURE 1C.

The final points and polygons of an object combine to form what is known as the object's **GEOMETRY** or **OBJECT MESH**. Both terms are used synonymously.

The following diagram shows an object in its final appearance and the geometry that it consists of.



Object Fully Rendered



Object Geometry

The ability to edit or modify the points and polygons in your model will be crucial to the amount of detail you wish to create in your models. Since most shapes are modified versions of the simple “primitive” shapes you start with, you will have to edit your objects in some fashion. However, for this beginning course you will only be required to work with the “primitive” shapes and Text options.

If you have time and wish to modify these simple shapes to your liking, feel free to experiment. The next section will discuss how to edit individual points and polygons.