PRIMITIVES

Most modeling programs include a bundle of elementary shapes that can be used when creating models. These shapes, or primitives, provide a useful variety of easy-to-use forms that can be rendered quickly.

While primitives provide an easy stepping stone towards creating a 3D world, they also have advantages for advanced users. More sophisticated tools can replicate these simple shapes, but often at the cost of rendering time and file size.

If you need to make a telephone pole, using a cylinder instead of a lathed object will work well. (Lathe objects take longer to render.) If your scene requires 50 telephone poles you will soon see the importance of primitives.

Even though primitive forms may be simple, the detail may lie in the color map. Simple form does not mean simple image. Nine-tenths of creating a successful, realistic model is in the color map which is applied to the form.

BASIC BUILDING BLOCKS Simple objects can form realistic images. Like its more sophisticated family members—lathe, extrusion and free-form tools—the success of using primitives lies in the skillful use of color maps. For example, the same cube that creates a wall also becomes a magazine. The forms used to make the above images are shown below. The color-coded inset (below left) shows the primitives used to create the scene.
DOWN AND DIRTY STAGES

Very seldom do you want your background color showing through in your scenes. To create realistic images you have to create a believable stage. The simple cube is a quick, painless way to achieve that goal. Reducing the proportions of one side, you get a flat, mappable surface. By copying and rotating that object a few times, the walls, ceiling, and floors quickly take shape.

DETAILS, DETAILS

The thrifty nature of the primitive makes it perfect for detail, especially repetitive detail. Spheres used as is or slightly squeezed make perfect rivets. Because of the economy of the shape, you can use many spheres. Cylinders make great ropes, wires, posts and spokes (left). In this example, both the rivets and the spokes were established. Then, using a "make-child-like-parent," or "replicate link" function, the image to the left came together with a dozen key-strokes. Remember, the computer can do a lot of your work—if you let it. Know your software.

ROUND THINGS

If you create balls and globes using the lathe tool, they can get bulky in short order. With no corners, bevels or defined shapes, this is one case where primitives rule supreme. The key, of course, is what you put on the sphere. Cylindrical wraps work well for globes where the top and bottom of the texture map pinches in, such as a Mercator projection map. Other textures, such as a tennis ball map, use a standard wrap that affixes an image onto the sphere much like a bumper sticker.

BEAUTY IS ONLY SKIN DEEP

Forget what your mother told you. It is not what is on the inside that counts—not at least in a computer's 3D world.

Primitives, by their nature, are very simple. But that does not mean primitives cannot be used to produce remarkable models. The surface texture mapping brings primitive models to life.

Although the image mapped to the surface is important, the technique used will reflect on the final product as well. Fortunately, most programs make it obvious which mapping technique to use.

With the expanded surfaces (right), the cube uses a 4-sided cubical map. The cone works with a cylindrical map, but beware of pinching at the top. Cylindrical wraps are well-designed for cylinders, and spherical maps for balls.

You do not always have to follow the rules. Sometimes it is fun to draw outside the lines. For instance, an image of a building facade may wrap nicely around a cube using a cylinder wrap.