Halfway between the basic geometric forms of the cube and the sphere lies the cylinder, a common shape in the human body. Understanding how to correctly depict a cylinder will greatly ease and enhance the rendering of most natural objects.

The cube, the cylinder, and the sphere are the fundamental shapes an artist must absorb to achieve a deeper understanding of all forms. The cylinder—a combination of the cube and the sphere—exists in the middle of these three. Many forms can be built out of a cube (the subject of last issue's Drawing Fundamentals article), and the cylinder is the most logical geometric form to tackle next. Drawing cylinders well is important, particularly in a still life—in which the artist is continually confronted with ellipses found in items such as a plate, a bowl of fruit, a glass of wine, or any cylindrical man-made form—and in figure drawing, which is nearly impossible without the use of cylinders.

Circles and Ellipses: The Foundations of Cylinders
Before you can draw a cylinder well, you must first learn how to draw an ellipse, but let's begin with drawing a circle.

A circle is a curved line in which all points are the same distance from the center. (See Illustration 1.) It is said that Giotto could draw a perfect circle without any mechanical aids. But we don't hear about his mistakes, so in the meantime we must practice. To begin, draw a 4-inch square and add intersecting lines from corner to corner to find the midpoint, then draw lines through the center at right angles to each other. Then try drawing a freehand circle so it touches the square's middle extremities at the top, bottom, left, and right. Once you become proficient at drawing circles it's time to try ellipses. For materials I'd recommend a drawing board, a bond or smooth sketch paper pad, and charcoal or graphite pencils.

A circle, which exists on a flat plane, becomes an ellipse when the plane is tipped. When flat on a table, your 4-inch circle forms an ellipse because it's in perspective, tilted away from you. (See Illustration 2.) Notice that because of perspective, the true horizontal middle—called the "perspective center"—appears farther back. To draw a successful ellipse without distortion you must consider the concept of the minor and major axes. The minor axis is the shortest diameter of the ellipse, and the major axis is the longest diameter. Both are always centered and at right angles (perpendicular) to each other. In Illustration 3, when we move the major axis in front of the perspective center (dotted line) to the exact middle of the minor axis and draw by relating to the new midpoints, the ellipse appears correct.

In the left half of Illustration 4, the axes are incorrect because the major axis is not at a right angle to the minor axis. Illustration 5 shows the proper orientation of the major and minor axes running at right angles to one another and therefore "spinning" correctly, like the wheel of a car on its axle. In Illustration 4, the left wheel appears broken.
Illustration 2 by Jon deMartin, 2008, charcoal on newsprint, 24 x 18.

Illustration 3 by Jon deMartin, 1990, charcoal on newsprint, 18 x 24.

Illustration 4 by Jon deMartin, 2008, charcoal on newsprint, 18 x 24.

Illustration 5 by Jon deMartin, 2008, charcoal on newsprint, 18 x 24.

Illustration 6 by Jon deMartin, 2008, charcoal on newsprint, 18 x 24.
**Drawing Cylinders**

The eye cannot see halfway around a cylinder, just as it cannot see the horizontal middle of a cube when looking straight on—the front plane blocks the eye. The eye sees the widest part of a cylinder, which is in front of the perspective middle.

Illustration 6 shows the process of building a cylinder out of a cube—you must be able to draw a good cube in perspective before you can build a successful cylinder. Imagine finding a cube and drawing a circle on top of the cube with a compass so the circle touches all sides. After drawing the cube, draw an imaginary vertical axis through the middle of its top and bottom planes. Draw the ellipses with very light lines using the midpoint as a guide to find both the minor and major axes. You will notice that as before, the major axis is in front of the cube’s perspective middle (dotted line). Illustration 6 shows the cube with both ellipses connected at their widest extremities (the ends of the major axis) with dotted lines. Again, notice that the major axis is always at exactly right angles with the minor axis. No matter how the cube is turned around the cylinder, the circle retains its perfect roundness, as shown in Illustration 7.

The left diagram in Illustration 8 shows an extended cylinder oriented vertically with its elliptical cross sections. Notice that the ellipses become rounder as they drop further below eye level in such a way that the bottom of the cylinder appears rounder than the top. The right side of Illustration 8 shows the same cylinder oriented on a diagonal. The same principle applies—ellipses become rounder as they move away from the eye, in this case from left to right. In any cylinder, no matter what its orientation, the major axis is always at a right angle to the minor axis. The minor axis also coincides with the axle running through the middle of the cylinder.

Illustration 9 shows three cylinders, each in a different position: tipped away, vertical, and tipped downward. In the straight-on view, the axis (the dotted line) running through each cylinder appears vertical. However, the shapes of their elliptical ends show their different positions in space. The right side of the illustration shows a side view of the same cylinders.
Illustration 10: Drawings After Sculpture by Eliot Goldfinger
by Jon deMartin, 2008, charcoal on newsprint, 24 x 18.

Illustration 10a
by Jon deMartin, 2008, charcoal on newsprint.

Illustration 11a
by Jon deMartin, 1990, charcoal on newsprint, 24 x 18.

Illustration 11

Illustration 12
by Romolo Costa, ca. late 1970s, burnt sienna Nupastel on newsprint, 18 x 24.

Illustration 13
by Romolo Costa, ca. late 1970s, burnt sienna Nupastel on newsprint, 24 x 18.
Using the Cylinder to Draw the Human Figure

Artists for centuries have related basic geometric solids to the human figure. Illustration 10 shows three views of a figure conceived as cylinders. The dotted lines indicate the variety of axes running through the masses of the head, rib cage, pelvis, limbs, and extremities. Understanding the axes of these forms increases our ability to conceptualize their volumes in space. By utilizing these constructs, artists can achieve a greater awareness and appreciation of a model when drawing from life. The potential for the model's movements are limitless.

Consider Illustration 11. The figure's overall internal axis resembles a cylindrical C-curve. Next to it is its basic shape with cross sections, all of which are perpendicular to its main axle, like a sliced salami. The cross section is an extremely effective way of conceptualizing the form's mass and position in space. When an artist is challenged for time and the model takes a striking pose that cannot be held for a long duration, these principles for understanding volumes in space can be extremely valuable.

Illustration 12 is a powerful drawing by the late Romolo Costa that shows the artist's profound knowledge of the model's three-dimensional form. Even the fingers were conceptualized as cylinders. Notice the cylindrical cross sections of the model's left leg receding in space. Finding the direction of the forms is a very important technical consideration. Using directional lines, such as the ellipses in the left leg, creates the feeling of form as an entity in space.

To model with any degree of authority, form must first be conceptualized in three dimensions. In Illustration 13, there's no indication of the model's direction. Had it not been for Romolo's ability to conceive of the model's three-dimensional form in line, this drawing would have appeared as flat as a board. It is this type of understanding of form that will help make your drawing of any object structural and dynamic—not merely a flat copy of nature.