artist daily
presents

DRAWING BASICS

Learn How to Draw a Cylinder, How to Draw a Sphere, How to Draw a Cube & More Free Beginner Drawing Techniques

The Cylinder

Understanding how to correctly depict a cylinder will greatly ease and enhance the rendering of most natural objects.

by Jon deMartin

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, 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.

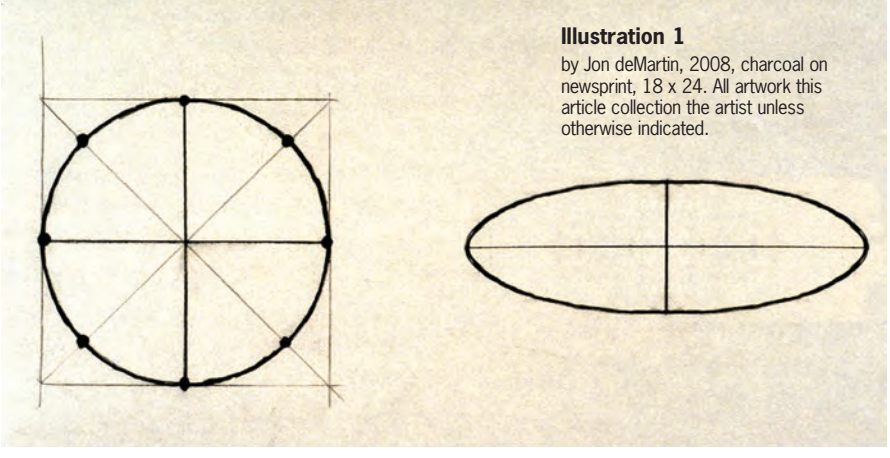
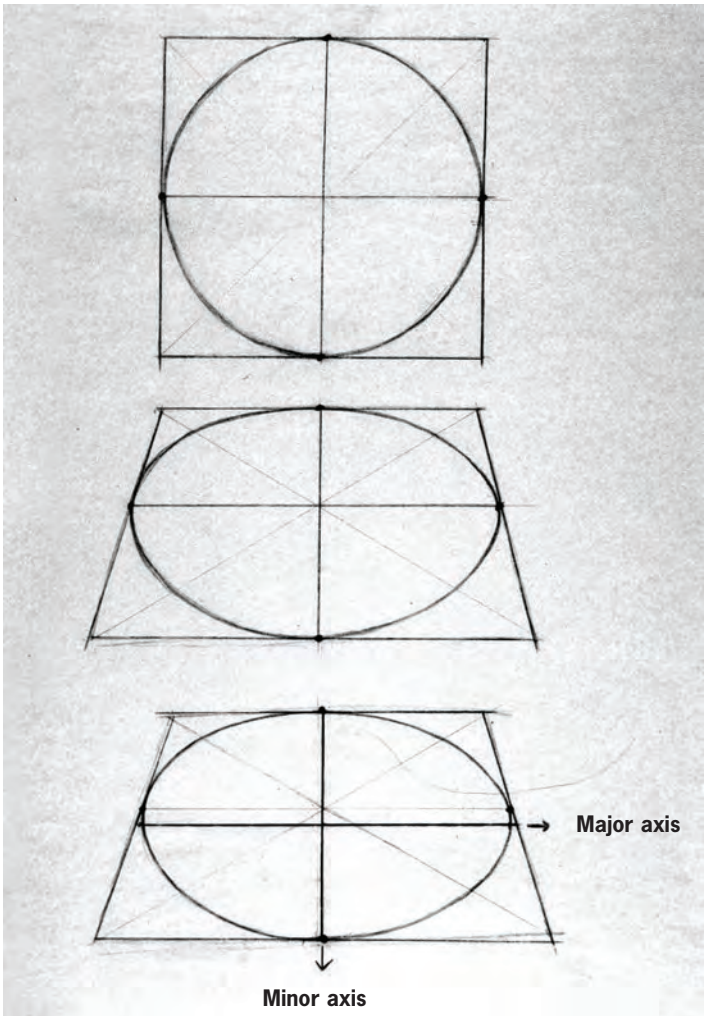


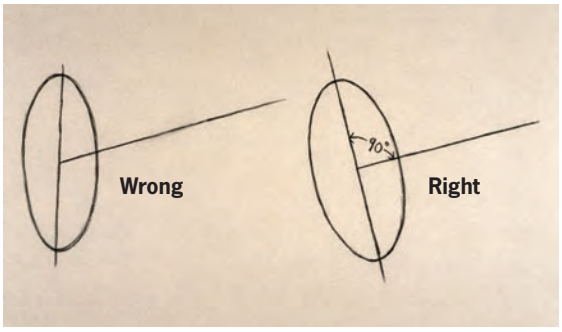
Illustration 1
by Jon deMartin, 2008, charcoal on newsprint, 18 x 24. All artwork this article collection the artist unless otherwise indicated.

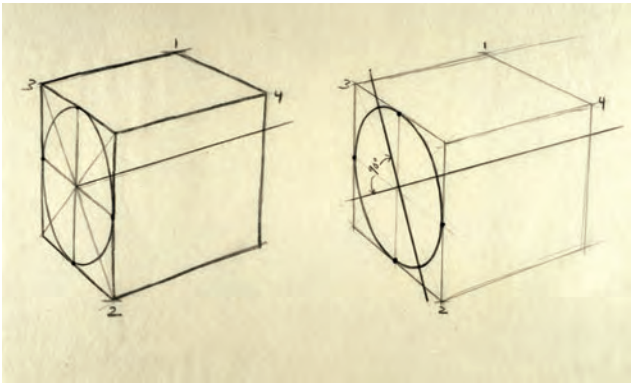


LEFT
Illustration 2
by Jon deMartin, 2008, charcoal on newsprint, 24 x 18.

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

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





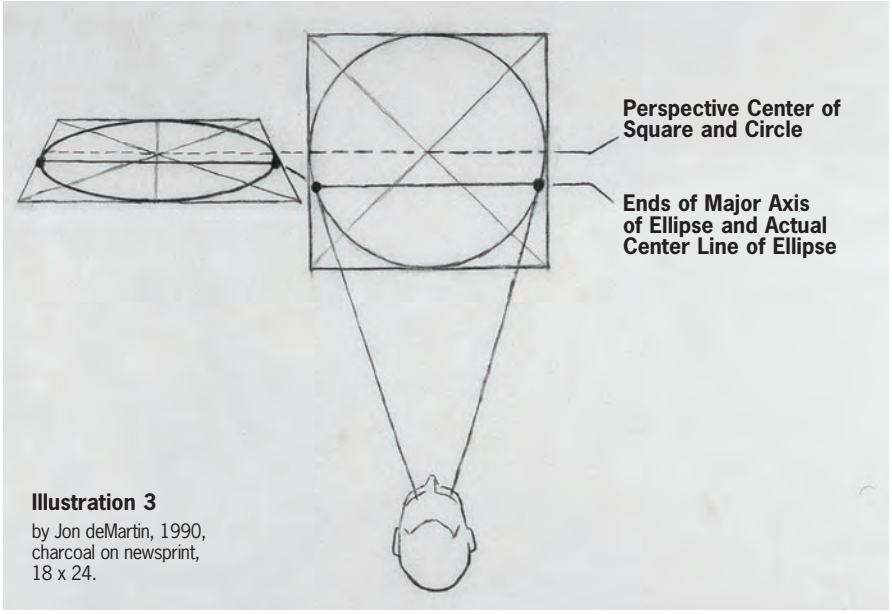
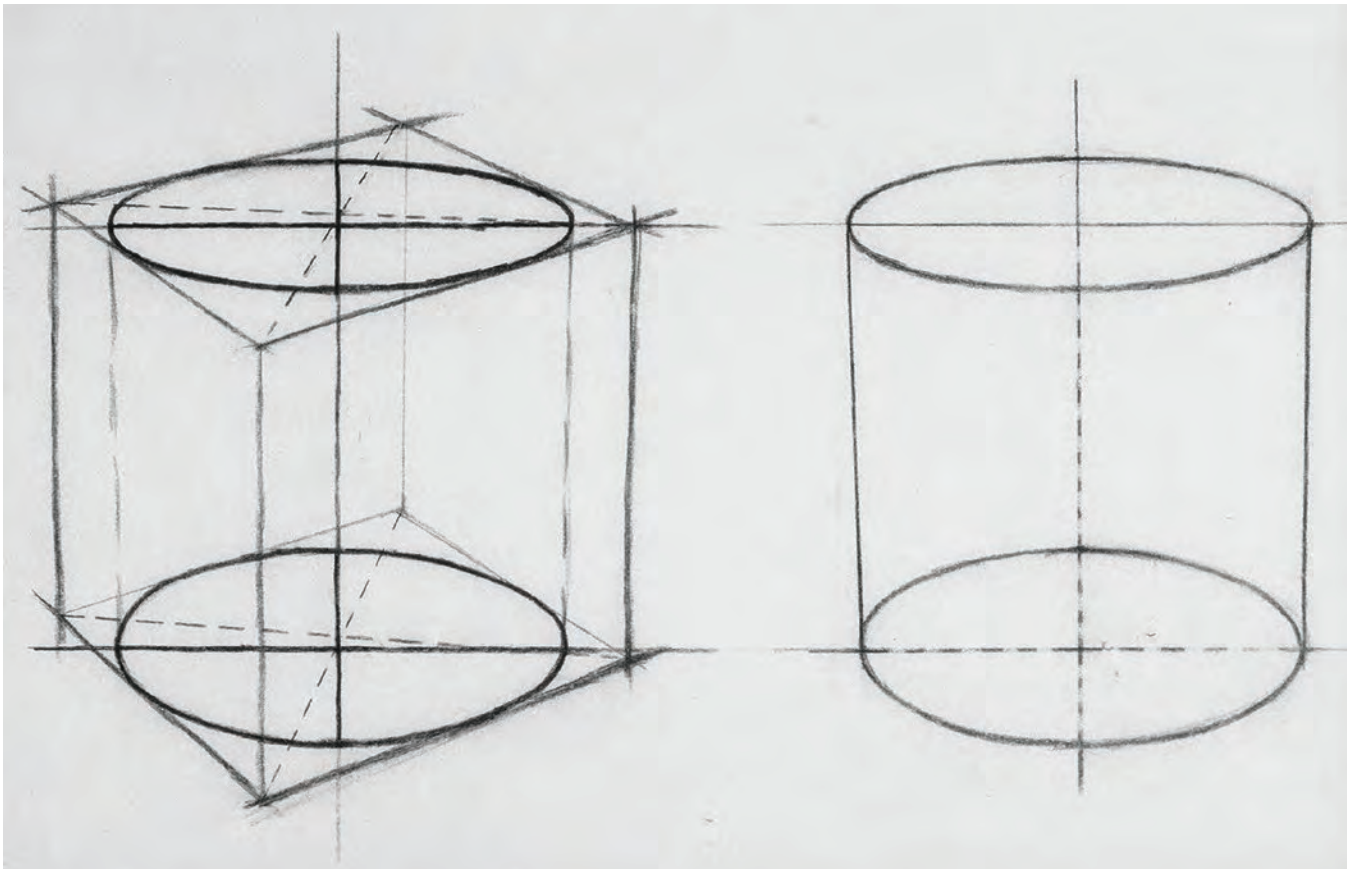


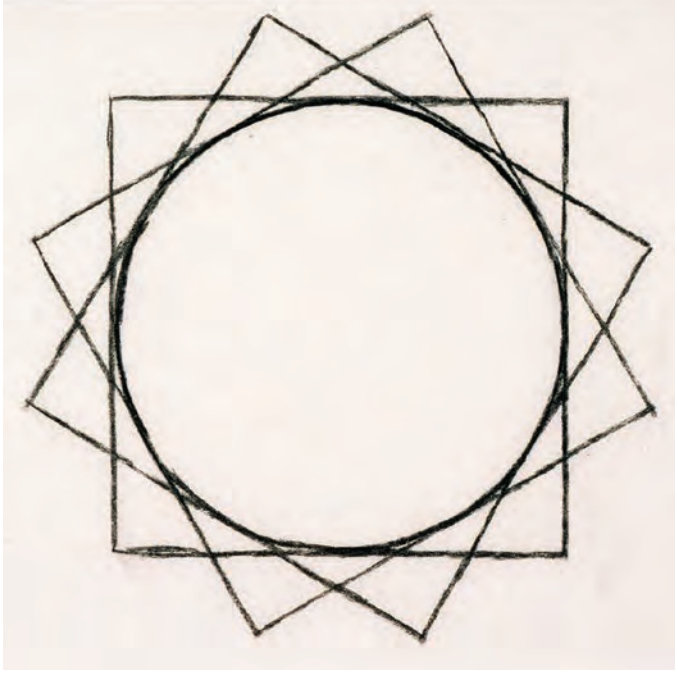
Illustration 3
by Jon deMartin, 1990, charcoal on newsprint, 18 x 24.

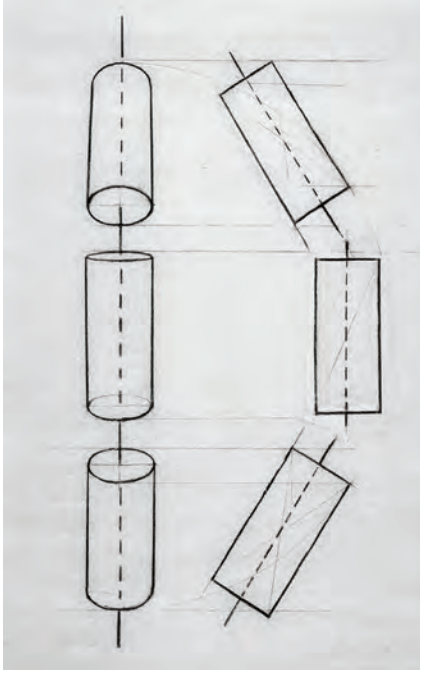
In the left half of Illustration 4, the axes are incorrect because the major axis is not at a right angle to the minor axis. Illustration 5 shows the proper orientation of the major and minor axes running at right angles to one another and therefore "spinning" correctly, like the wheel of a car on its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

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







ABOVE
Illustration 6
by Jon deMartin, 2008, charcoal on newsprint, 18 x 24.

FAR LEFT
Illustration 7
by Jon deMartin, 2008, charcoal on newsprint, 18 x 24.

LEFT
Illustration 9
by Jon deMartin, 2008, charcoal on newsprint, 24 x 18.

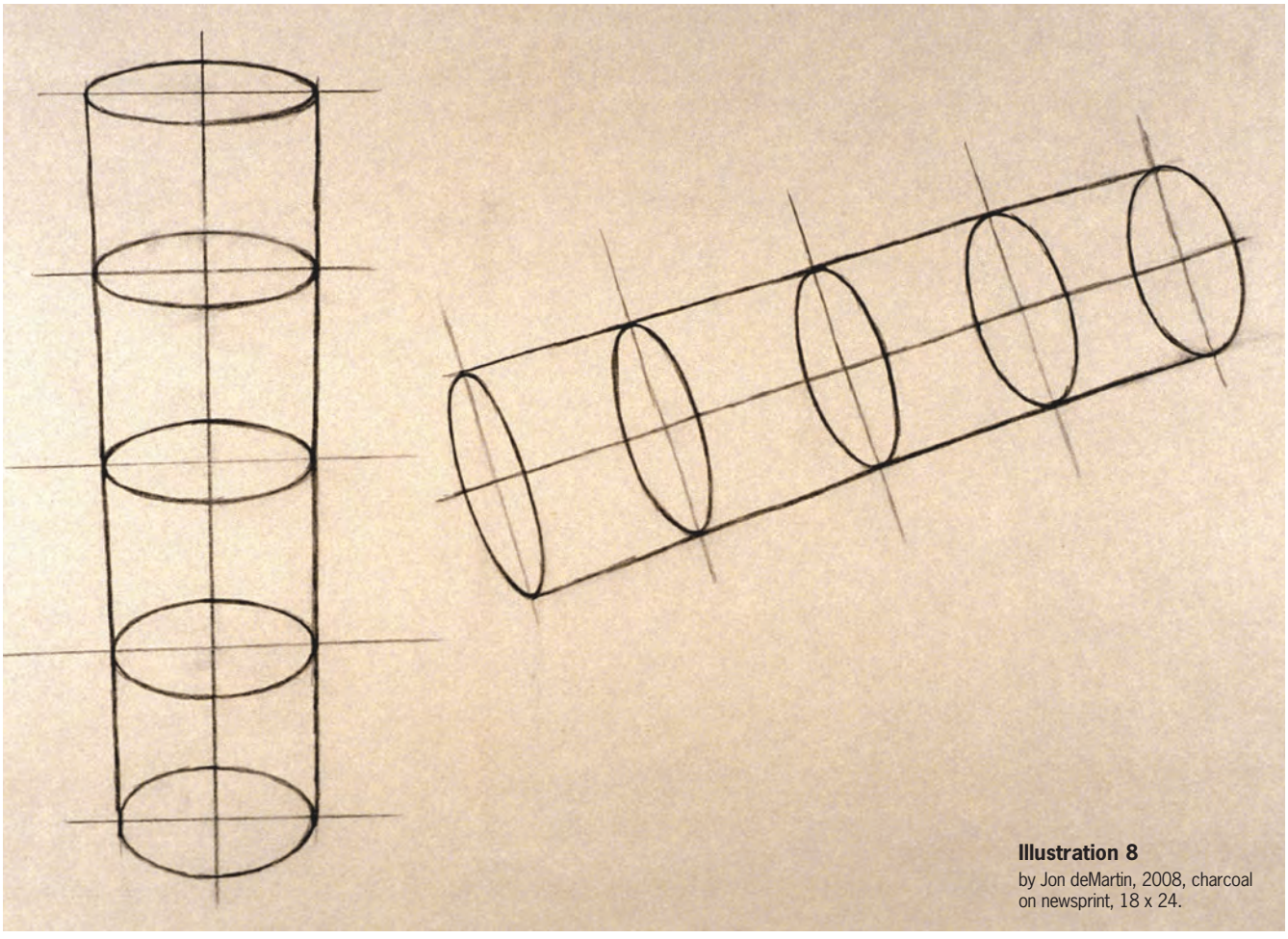


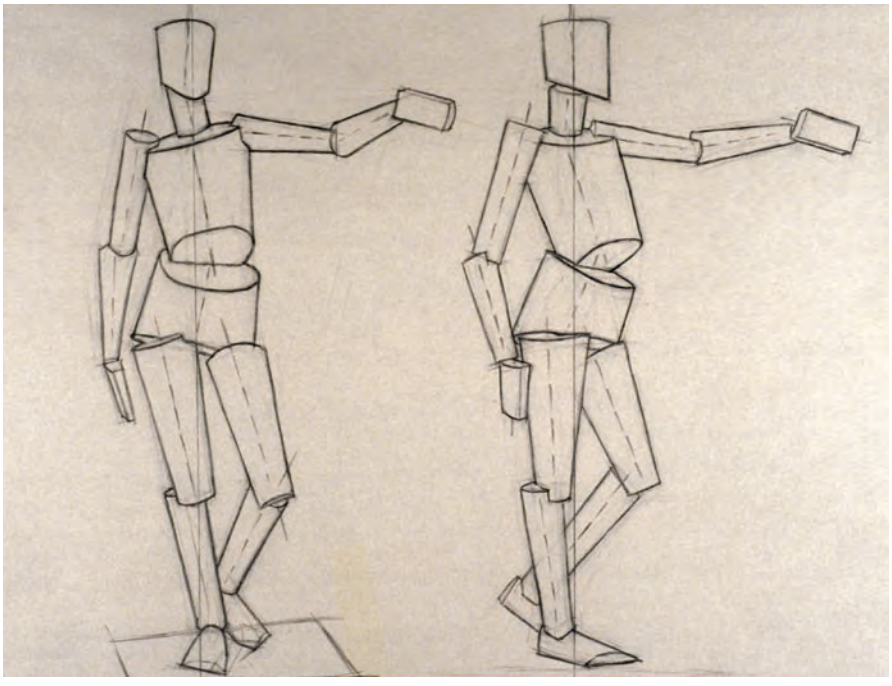
Illustration 8
by Jon deMartin, 2008, charcoal on newsprint, 18 x 24.

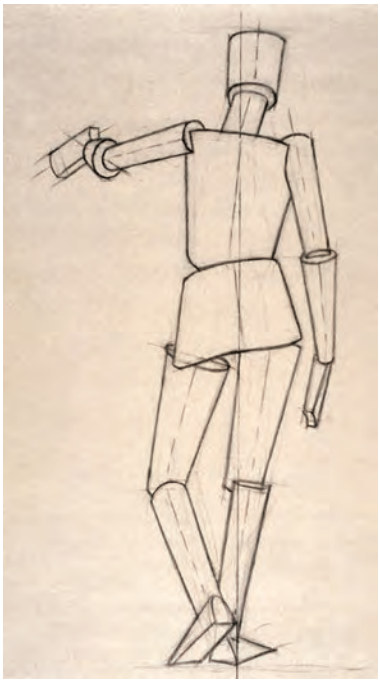
cylinder, which is in front of the perspective middle.

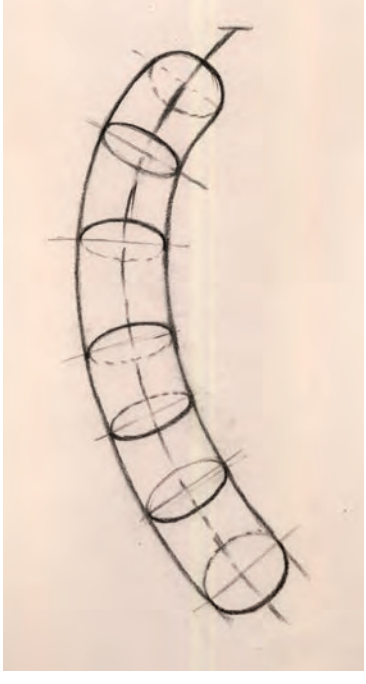
Illustration 6 shows the process of building a cylinder out of a cube—you must be able to draw a good cube in perspective before you can build a successful cylinder. Imagine finding a cube and drawing a circle on top of the cube with a compass so the circle touches all sides. After drawing the cube, 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.







TOP LEFT
Illustration 10: Drawings After Sculpture by Eliot Goldfinger
by Jon deMartin, 2008, charcoal on newsprint, 24 x 18.

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

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

ABOVE RIGHT
Illustration 11
by Jon deMartin, 1990, burnt sienna Nupastel on toned paper, 25 x 22.

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.

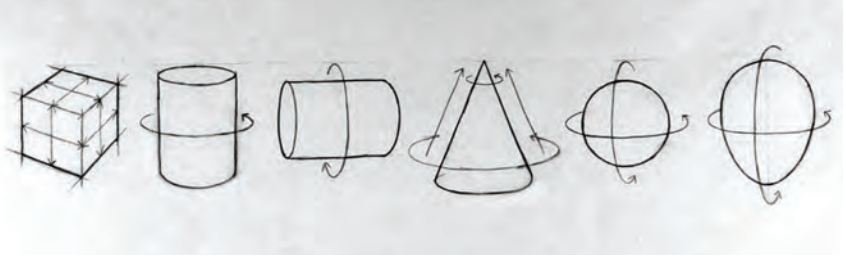
ABOVE
Illustration 12
by Romolo Costa, ca. late 1970s, burnt sienna Nupastel on newsprint, 18 x 24.

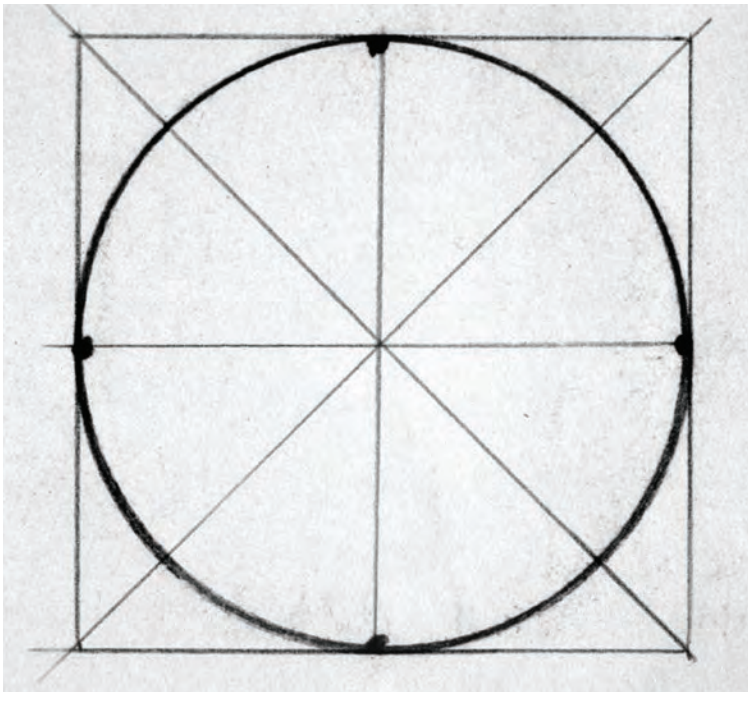
RIGHT
Illustration 13
by Romolo Costa, ca. late 1970s, burnt sienna Nupastel on newsprint, 24 x 18.

The Sphere

The sphere and the ovoid are two forms that should be thoroughly studied to aid in the depiction of naturalistic objects of all kinds—including the human figure.

by Jon deMartin





TOP

Illustration 1 (detail)

2009, charcoal on newsprint, 24 x 18. All artwork this article collection the artist unless otherwise indicated.

As opposed to the cylinder, which is curved in only one direction, spheres and ovoids curve in two perpendicular directions.

BOTTOM

Illustration 2

2009, charcoal on newsprint, 9 x 12.

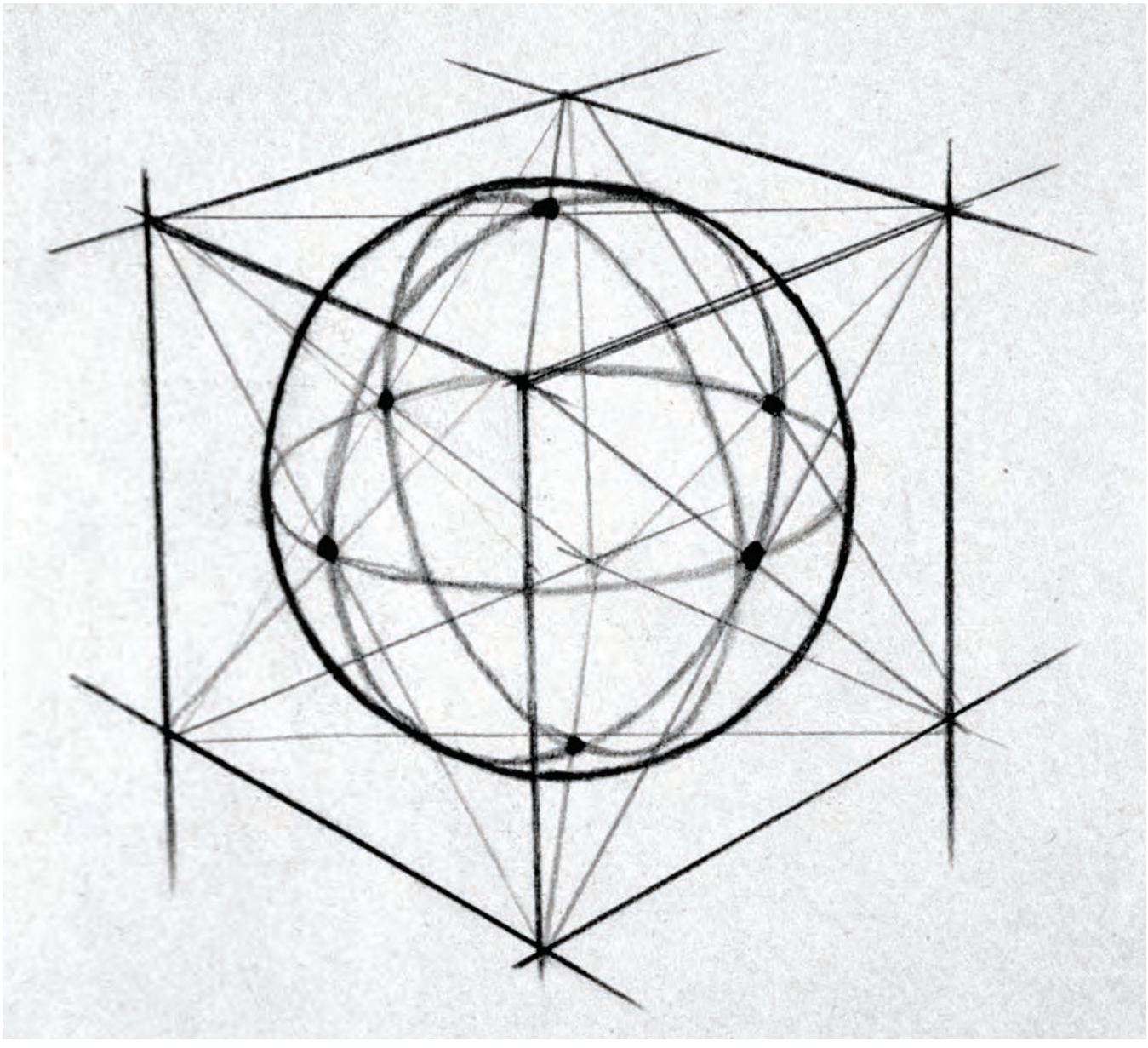
Find the midpoints of the four sides of a square, and you will have the points where a corresponding circle touches the frame formed by the square.

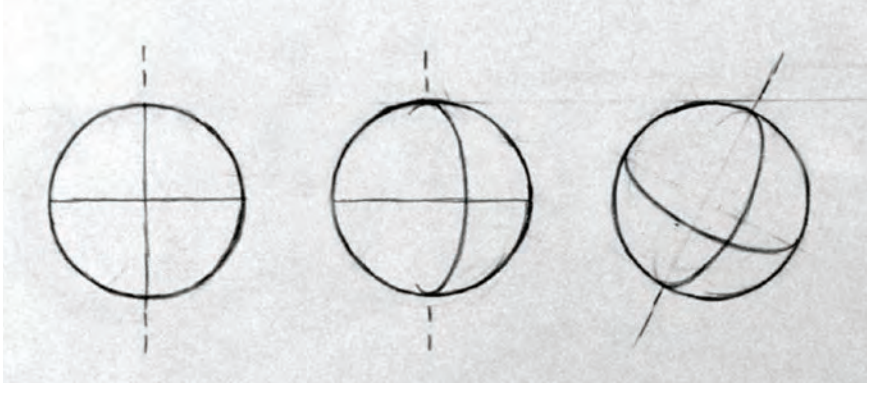
The sphere (ball) and ovoid (egg) are the two main geometric forms that represent curvature going in two different directions—up and down and side to side. Learning to render them can greatly aid your efforts to draw many organic objects.

The most practical way to start drawing a sphere is to draw a circle inside a square. Find the center of each of the four sides of the square, then draw a circle that touches those four points. You now have the shape of a flat circle. (See Illustration 2.) Next, visualize a sphere, which can be built out of a cube by marking where the sphere touches the middle of a cube's six sides. (See Illustration 3.)

Note that a sphere, no matter how you view it, will always retain its original shape. To achieve the illusions of depth and of the sphere's position in space, the artist can draw medians or centerlines that travel both horizontally and vertically around the form. In Illustration 4, the left-most drawing shows how one viewpoint implies that the viewer's eye is looking at the exact middle of the sphere. The sphere looks flat; it does not reveal its position in space. In the middle drawing the sphere appears more three-dimensional because the vertical centerline is curved, implying that the sphere is turning. In the right-most drawing the sphere not only curves but also tips and tilts, offering the most volumetric illusion of all.

The axis also explains the sphere's position in





ABOVE

Illustration 3

2009, charcoal on newsprint, 9 x 12.

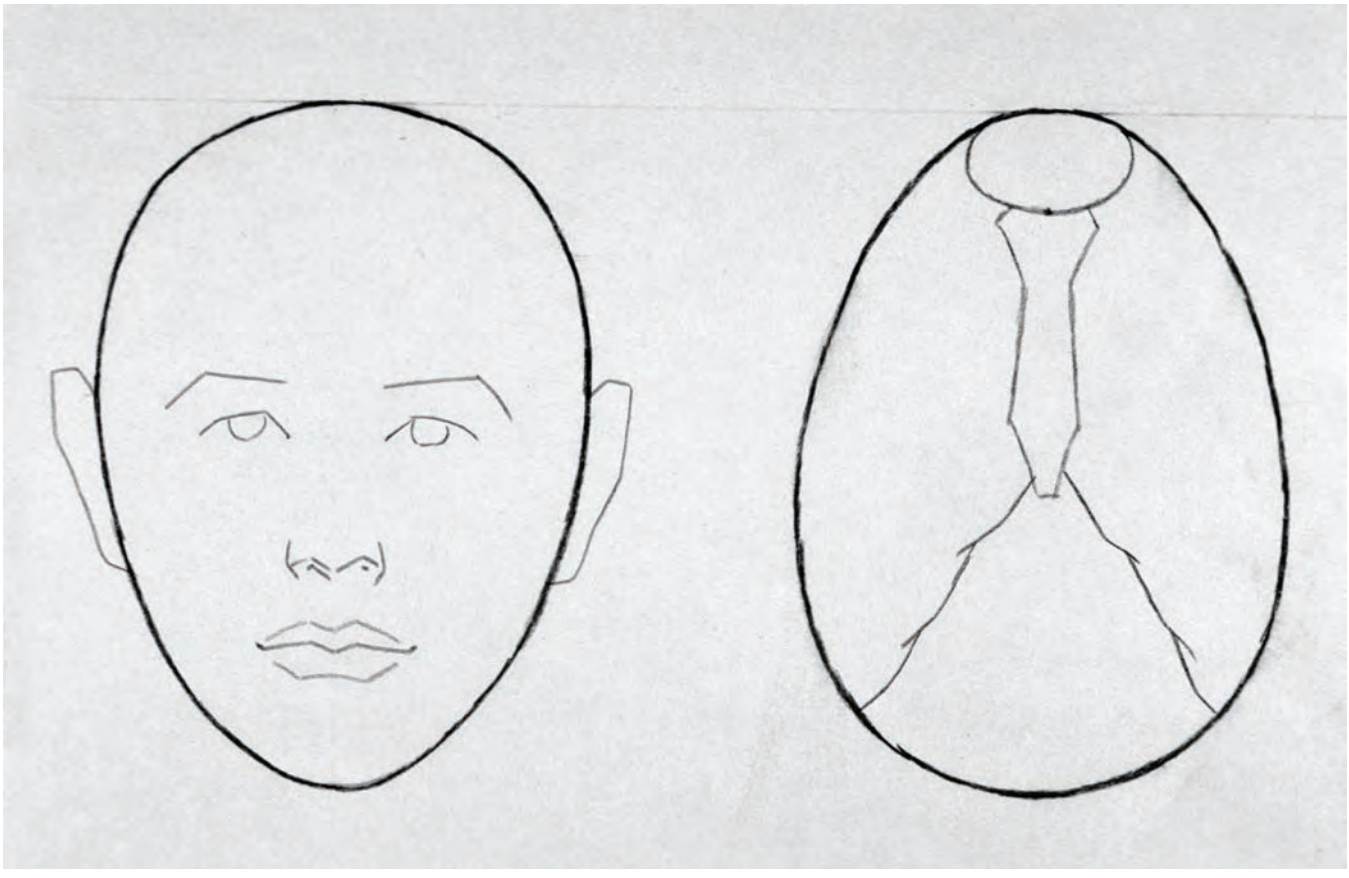
I drew this illustration to show the six points where the exterior of a sphere would touch the six sides of a corresponding cube.

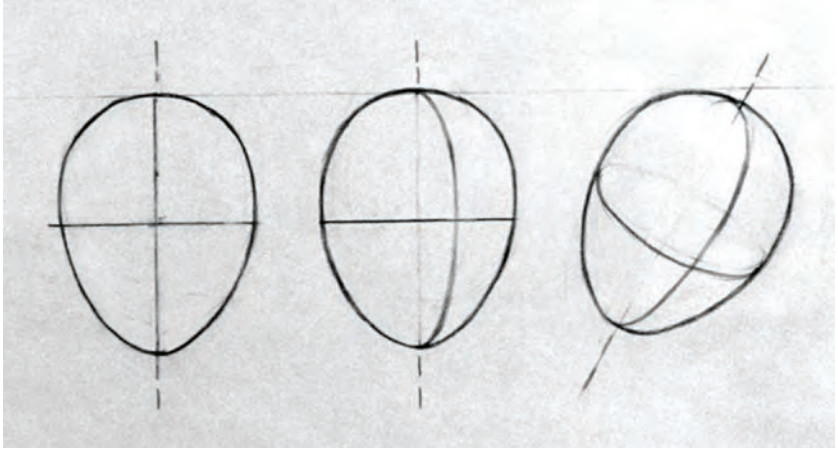
LEFT

Illustration 4

2009, charcoal on newsprint, 18 x 24.

The drawing on the left shows how flat a sphere can look if perpendicular centerlines bisecting the sphere are seen head on. The middle drawing shows how depicting one of the lines as a curve implies rotation of the sphere and enhances its three-dimensional shape. The drawing on the right optimizes the effect by tilting the sphere on an axis.





ABOVE

Illustration 5

2009, charcoal on newsprint, 18 x 24.

An ovoid viewed with the wide end on the top suggests the shape of a human head. An ovoid viewed with the wide end down suggests the shape of the human ribcage.

LEFT

Illustration 6

2009, charcoal on newsprint, 18 x 24.

A similar effect is achieved with centerlines on an ovoid. Showing the centerlines on a rotated and tilted ovoid more clearly shows how the shape behaves in a three-dimensional space.

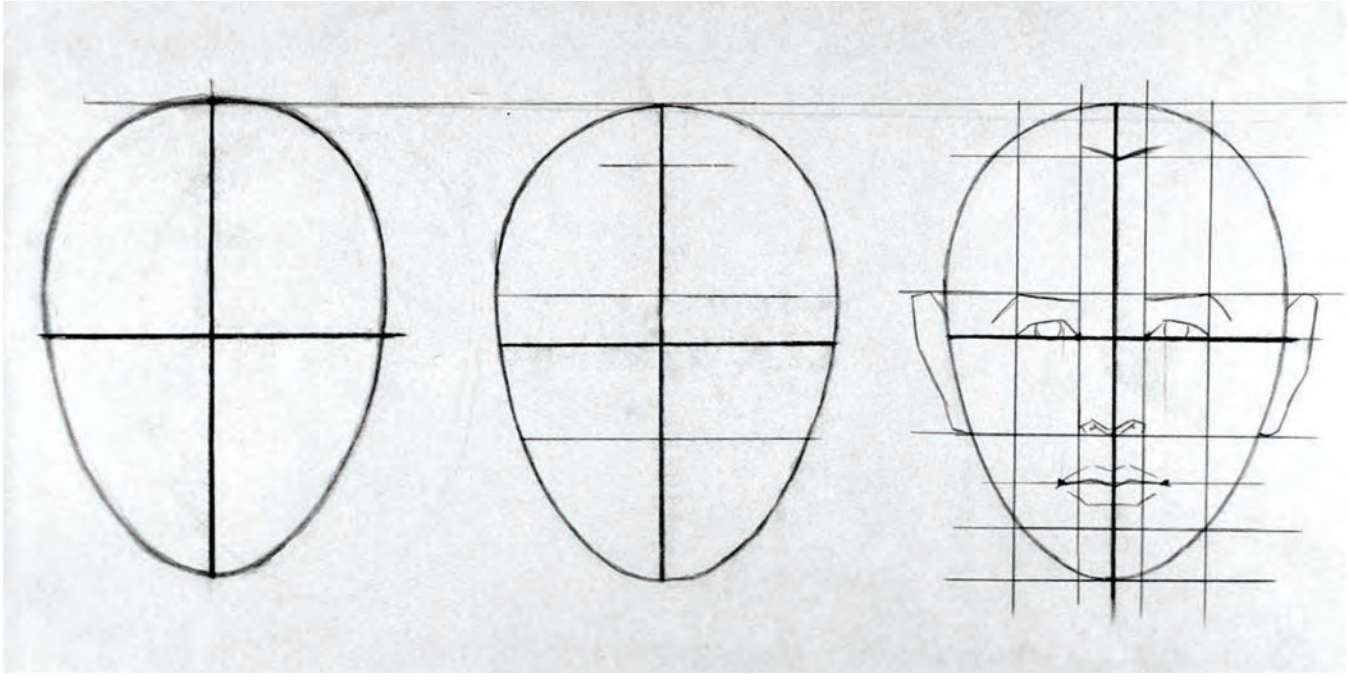
space. Up until now we've only been talking about theory, but now we'll put theory into practice. Get a white rubber ball and carefully inscribe vertical and horizontal centerlines around it and practice drawing the ball in many different positions in space. You will soon appreciate how effective such lines can be in conveying the ball's orientation in space. These examples prove that it isn't the outline alone that makes the form—the centerlines give the sphere a three-dimensional appearance.

An ovoid is slightly more difficult to draw than a sphere because of its irregular shape. It is the first step toward depicting a naturalistic object such as the human figure. If the ovoid is oriented vertically so that the widest part is on top, it will resemble a head. If its widest point is on bottom, it can resemble a ribcage. (See Illustration 5.) As with the sphere, vertical and horizon-

Illustration 7

2009, charcoal on newsprint, 18 x 24.

To more easily place features on a human head, first draw the horizontal and vertical centerlines, as shown in the drawing on the left. The facial area (which excludes the top of the head from the hairline up) can be divided into equal thirds, with the first third ending at the eyebrows, the next third ending at the bottom of the nostrils, and the last third extending to the bottom of the chin. Additionally, the human head can be divided vertically into five equal parts the width of the eye.



tal centerlines on the ovoid create the illusion of three-dimensionality when the ovoid is turned in different positions. (See Illustration 6.) Depicting the centerline on an ovoid is a device artists have used for centuries to suggest the human head in perspective. To practice drawing an ovoid, it might be helpful to follow the same instructions given for a sphere—get an egg (hard-boiled, of course), and carefully inscribe vertical and horizontal centerlines. Like a pianist practicing scales or a ballerina stretching at the barre, practice drawing the ovoid in as many variations as possible.

After drawing the outline of an ovoid or head, the artist should begin to find the vertical and horizontal centerlines before determining the smaller sections. The centerlines represent the most important measurements and should be established first, and accurately. The smaller measurements will then be correct and fall into their proper places.

Let's analyze the main proportions of the human head. The horizontal centerline represents the placement of the tear ducts or inner corners of the eyes. As a basic rule, the distance from the hairline to the eyebrow, from the eyebrow to the base of the nose, and from the base of the nose to the point of the chin are all equal, thus dividing the face (not the entire head) from top to bottom into thirds. (See Illustration 7.) The ear is placed in the middle of the head between the eyebrow and the base of the nose. The lower third of the face, from the base of the nose to the point of the chin, can be divided into thirds. The line indicating the upper third marks the center of the mouth. The middle third ends at the beginning of the upper chin. The last third goes from the upper chin to the bottom of the ovoid. The head is then divided from left to right into five equal segments, each one the width of an eye.

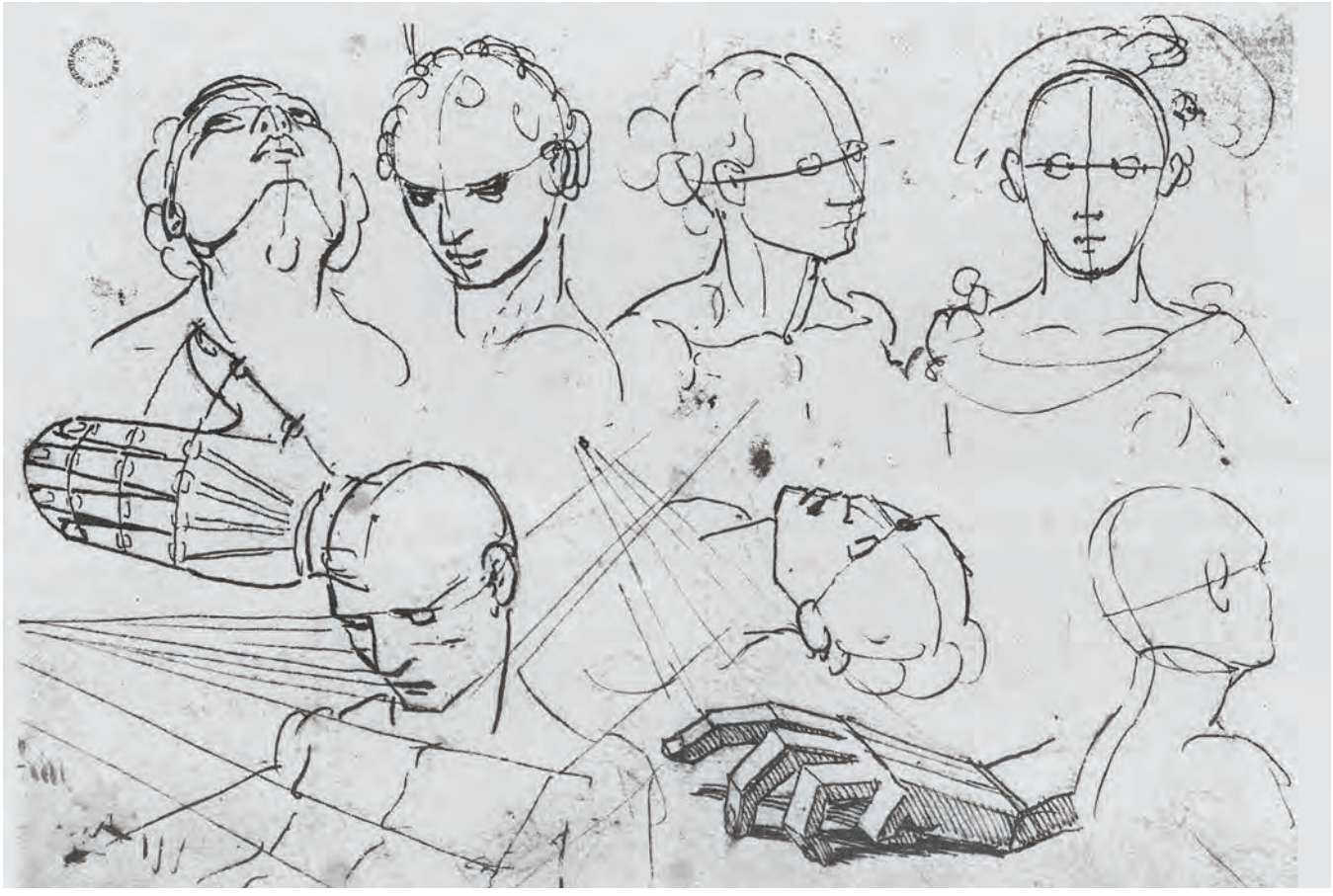
I have my students do "head gestures" in which the model moves his or her head every 60 seconds, tipping, turning, and tilting. It's a great test to see if the artist can capture the position of a head in a very short time span. This is *not* about capturing a likeness but strictly to explain the head's three-dimensional orientation in space. Note how the head sits on the cylinder of the neck; they are not usually pointing in the same direction. (See the head in

BELOW

Studies of Heads and Hands

by Hans Holbein the Younger, pen-and-ink.

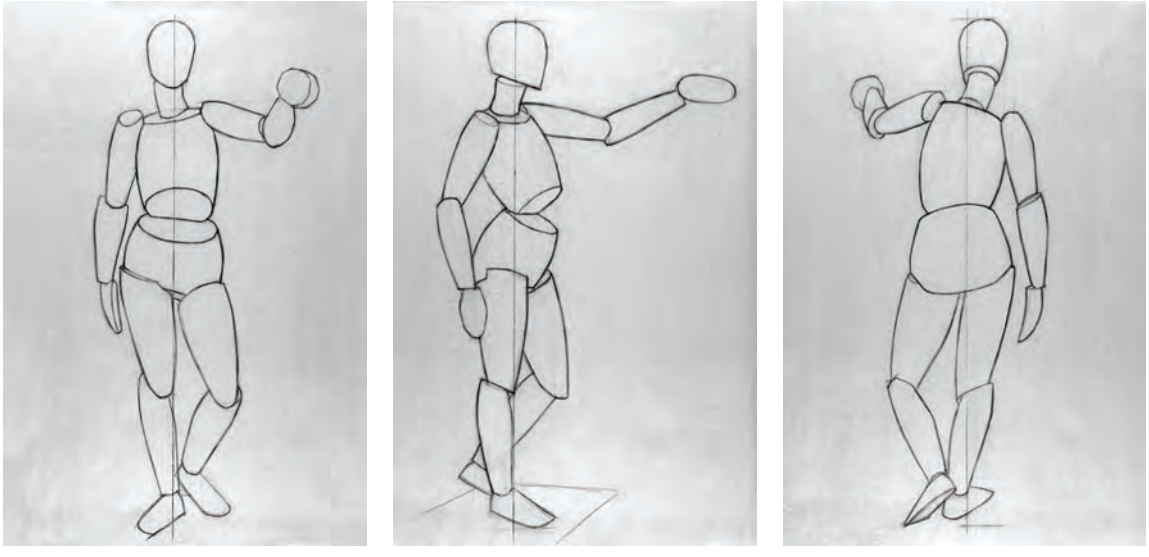
Holbein's unquestionable ability to draw a head in any imagined orientation is on display here. Many—if not all—of the earlier masters had the ability to first draw the figure from their imagination before working from a live model, something all figure artists today should learn to do.

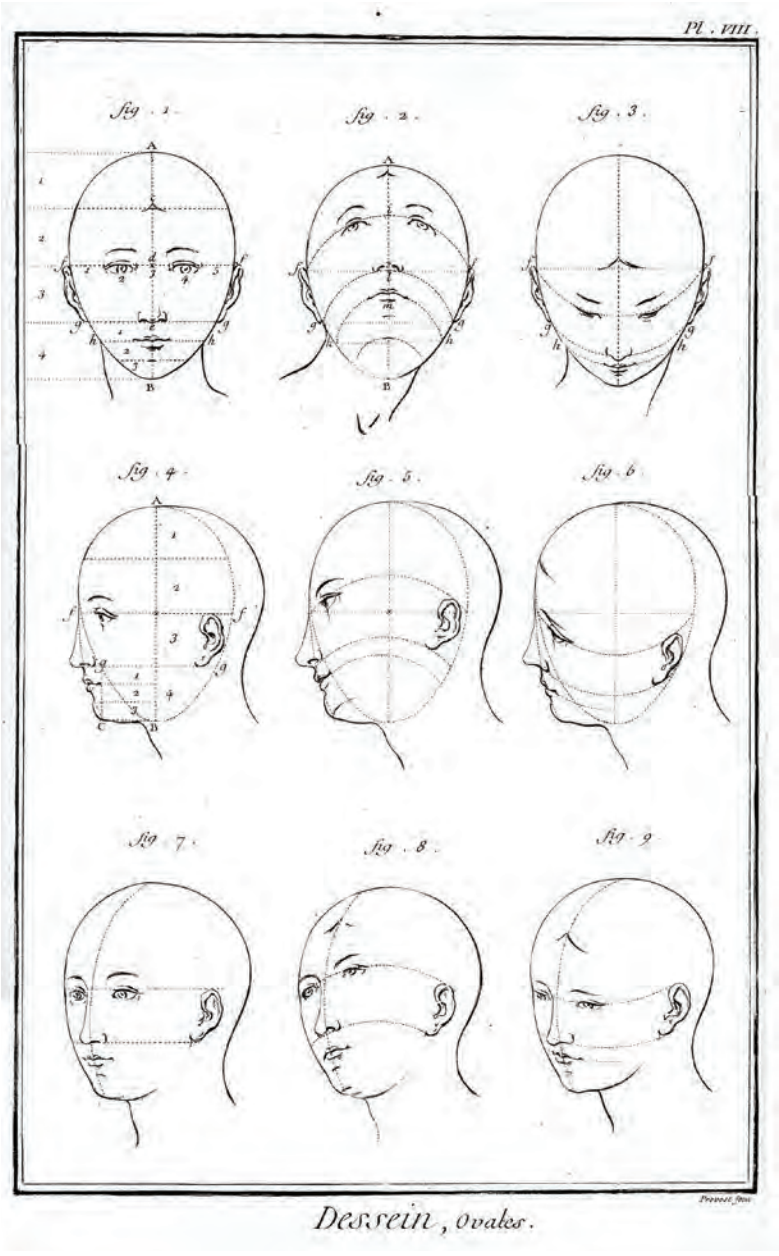


RIGHT

Illustration 8

These drawings of the figure utilize ovoids to demonstrate how the human body can be built using variations on this essential geometric building block.





LEFT

Illustration from Encyclopédie

edited by Denis Diderot, 1762–1777, engraving.

BELOW

Drawings After Sculpture by Eliot Goldfinger

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

the lower right of the Holbein illustration.) The 19th-century French artist Jean-Auguste-Dominique Ingres noted, "The head and neck never link together: They form two noncontinuous lines."

An 18th-century French engraving from Diderot's *Encyclopédie* depicts the ideal head divided into four equal parts. I find that making the distance of the hairline to the top of the head shorter makes the head appear more natural. However, the more important lesson to be learned from this engraving is what happens to the construction lines when the head is seen from different perspectives. Notice that when the head is tilted back the lines bend upward and the distance between the quarters decreases toward the top, and when the head is tilted down, the lines bend downward and the quarters decrease toward the bottom.

Illustration 8 shows a figure from several views and uses forms that appear ovoid. Remember, Ingres also stated, "Never do the exterior contours bend inward. On the contrary, they bulge, they curve outward like a wicker of a basket." When drawing the model, this conception is helpful in seeing the large, underlying roundness of each mass of the figure. Keeping these principles in mind will help increase your ability to draw from both life and imagination. ■

The Cube

Learn to draw the cube and you have a good introduction to basic perspective and to one of the geometric building blocks of all objects—including the human figure.

by Jon deMartin

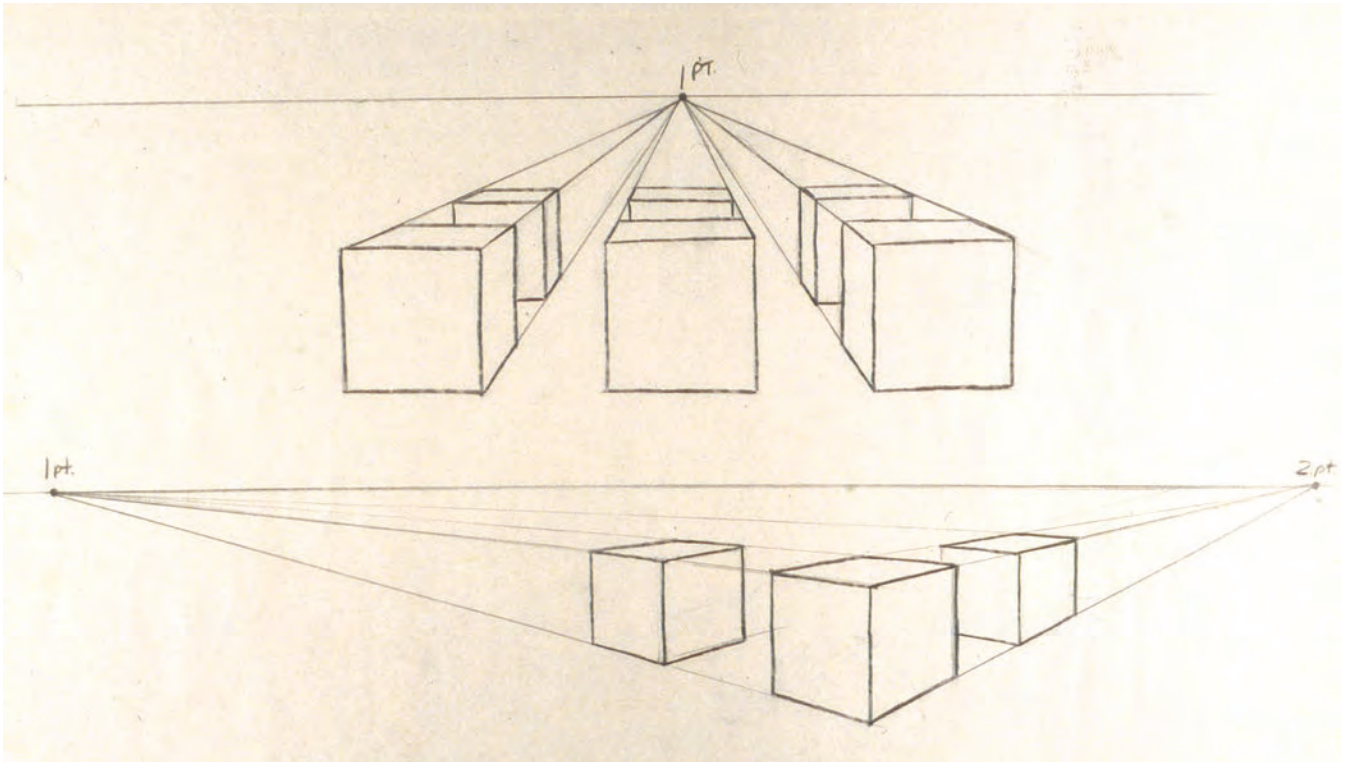
The Three Graces
by Jon deMartin, 2002, burnt sienna and white Nupastel on toned paper, 25 x 22. Private collection.

I remember one of my instructors saying, "What's the point of drawing the model if the student can't draw the model stand?", meaning the model's platform in its proper perspective. For the beginner, geometric object drawing is a vital first step to learning how to draw. In drawing even simple shapes the beginner will need to learn basic perspective.

The cube is the easiest object to draw in perspective. The ability to draw a cube from any angle, from both life and imagination, is essential for good draftsmanship. Once skill is gained in drawing a cube, it's not difficult to apply that knowledge to more complex subjects. The cube looks simple, but it's actually complex and requires both keen observation and knowledge of construction and perspective. If one can't draw a cube in perspective, then a head will be impossible.

It's always best to learn how to draw from actual objects—from life, not from photographs. The drawings should not be about value, but rather shape and perspective, because values are of little importance if the construction is wrong. As a rule, it seems best for beginners to confine their early attempts to outline, to getting the main proportions as accurate as possible. It's not necessary to draw on good paper since these are just exercises, but I'd recommend a fairly smooth sketchpad with graphite pencil and eraser.

Angular perspective is when a cube is placed in such a way that no surface is seen at a right angle; it doesn't appear in its true shape. When drawing the cube in this perspective, set it up askew so it's at unequal angles.



ABOVE

Illustration 1: One- and Two-Point Perspective

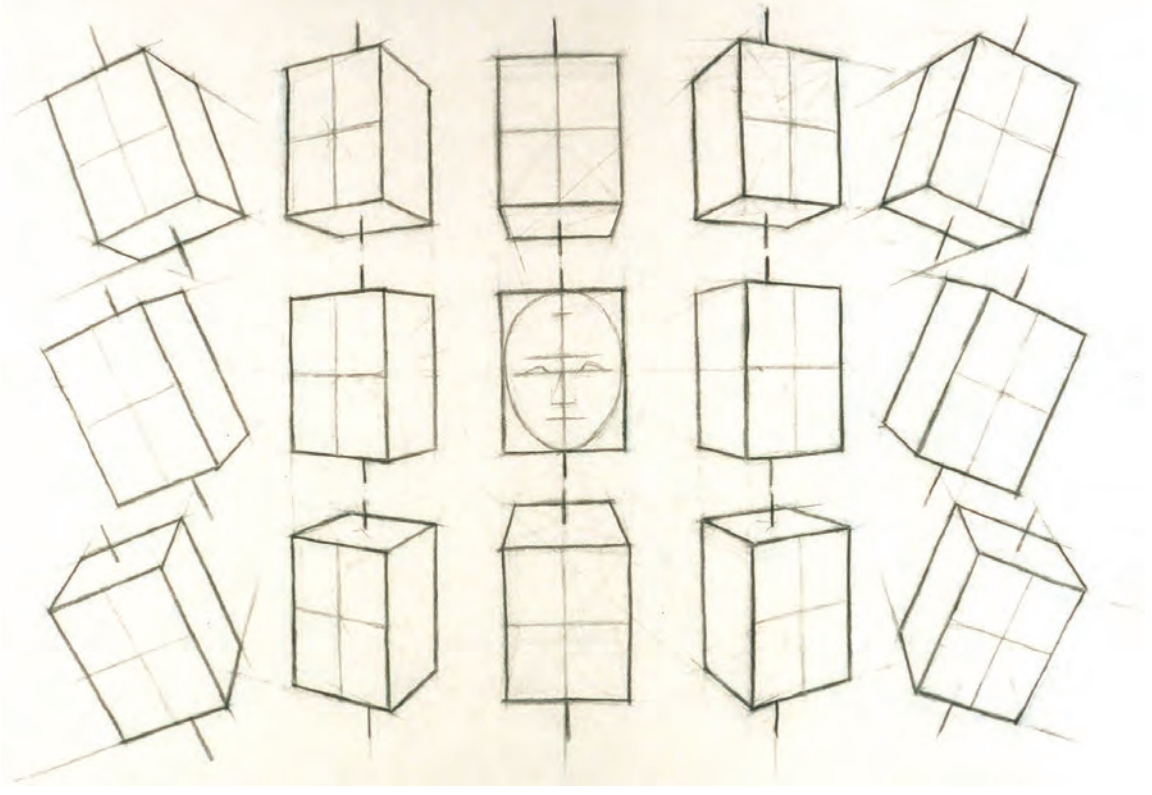
by Jon deMartin, 2000, charcoal pencil on newsprint, 18 x 24. All artwork this article collection the artist unless otherwise indicated.

The top portion shows cubes in a parallel perspective. The bottom portion shows cubes in angular perspective.

RIGHT

Illustration 2: Tipped, Turned, and Tilted Rectangular Volume

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



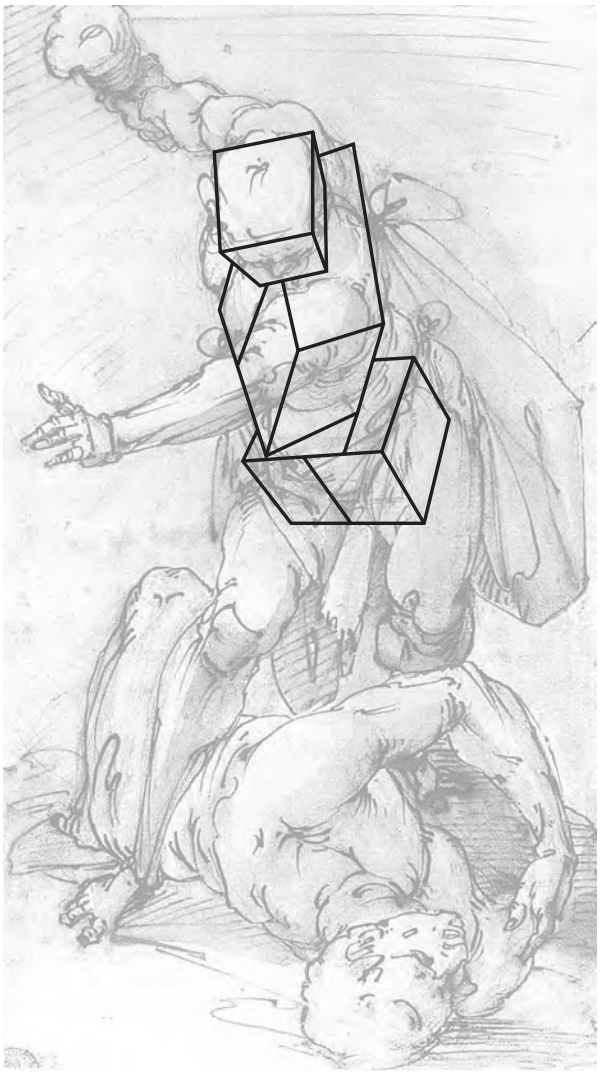


Illustration 3: Cain and Abel
by Luca Cambiaso, pen and wash drawing, 11¼ x 6¼. Collection the Woodner family.

Overlay of boxes added by author.

Think of the cube first as a flat, two-dimensional shape. As this is a linear drawing, it's better not to light the cube so shadows won't confuse the purity of the outside shape. Do not make your drawing of the cube too small—proportional errors are much easier to identify on a larger scale.

First establish the height of the cube by making horizontal marks at the top and bottom. Lightly draw in the outside shape relating to the height, then estimate the cube's width. Focus on four points: the top, bottom, left, and right extremities that contain the outside shape. Compare them to one another using horizontal and vertical lines. Keep estimating the outside shape before drawing the interior planes. The same principle would apply for drawing a head; you wouldn't start drawing the features before the outside shape. The danger of drawing the parts before the whole is that it decreases the odds of getting the main proportions accurate.

Now add the interior planes to better visualize the whole—the outside shape—in relation to the parts—the interior planes. Keep the early stages as simple as possible so it's easier to make corrections. Revise the drawing where needed. Addressing the simple visual appearance of the subject before considering the interior parts is a principle that you can apply to any kind of drawing—always think of the whole first and then the parts. If the cube's outside shape looks correct and the interior planes appear to fit, you're ready for the next step.

Next is the structural phase. In this case, structure means perspective. The cube may look accurate, but does it work in perspective? Here's where a grasp of freehand perspective comes into play. Without some basic knowledge of this concept, it's impossible to draw anything with authority.

Note where the horizon line is and try to give the corners of the cube the appearance of vanishing to it. Anything you draw is related to a horizon and vanishing points, although it is not always necessary to draw them. If you were to tack up your drawing on a wall and project the corners in straight lines you would see if they vanish at a common horizon line at your eye level.

Illustration 1 shows the cube in several perspectives, both parallel and angular. Parallel perspective means that the front face of the cube is at right angles or parallel to the line of sight or the viewer. In parallel perspective the corners of the cube converge to a single vanishing point on the horizon that is at the viewer's eye level. The bottom portion of Illustration 1 shows the cube turned so the front face of the cube is now in angular perspective—its front face is now turned away from the viewer at an angle. The corners converge to two vanishing points at the viewer's eye level. When drawing the cube it's advisable to locate the horizon line; that is, the eye level on the paper, making sure that the lines appear to converge at the proper vanishing points on this level. Remember, the horizon line is always at eye level. Try doing a page of cubes

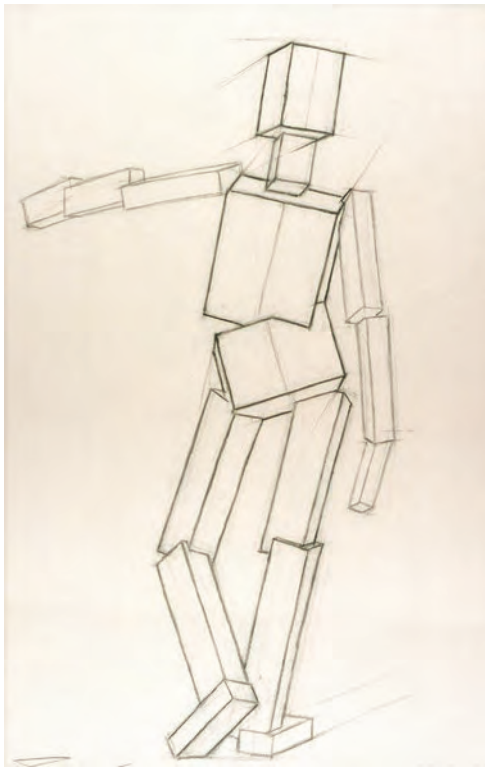
Group of Figures
by Luca Cambiaso, pen and wash drawing, 13 3/8 x 9 7/16. Collection the Uffizi Gallery, Florence, Italy.

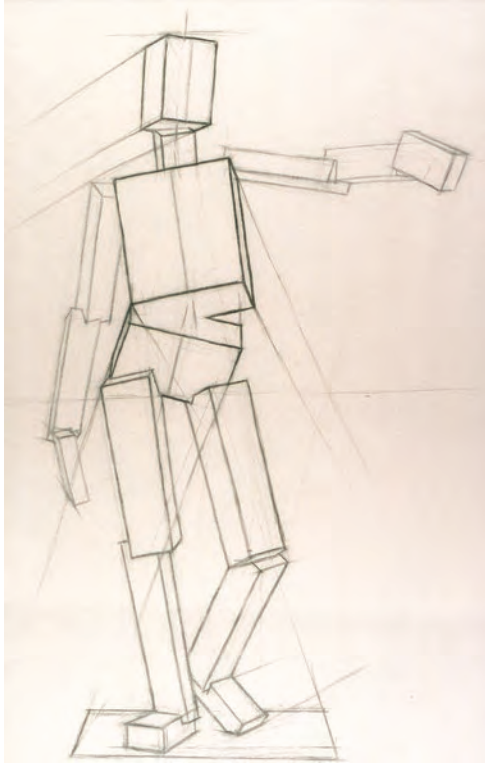
in your own arrangement. This will test your freehand judgment in drawing cubes in perspective.

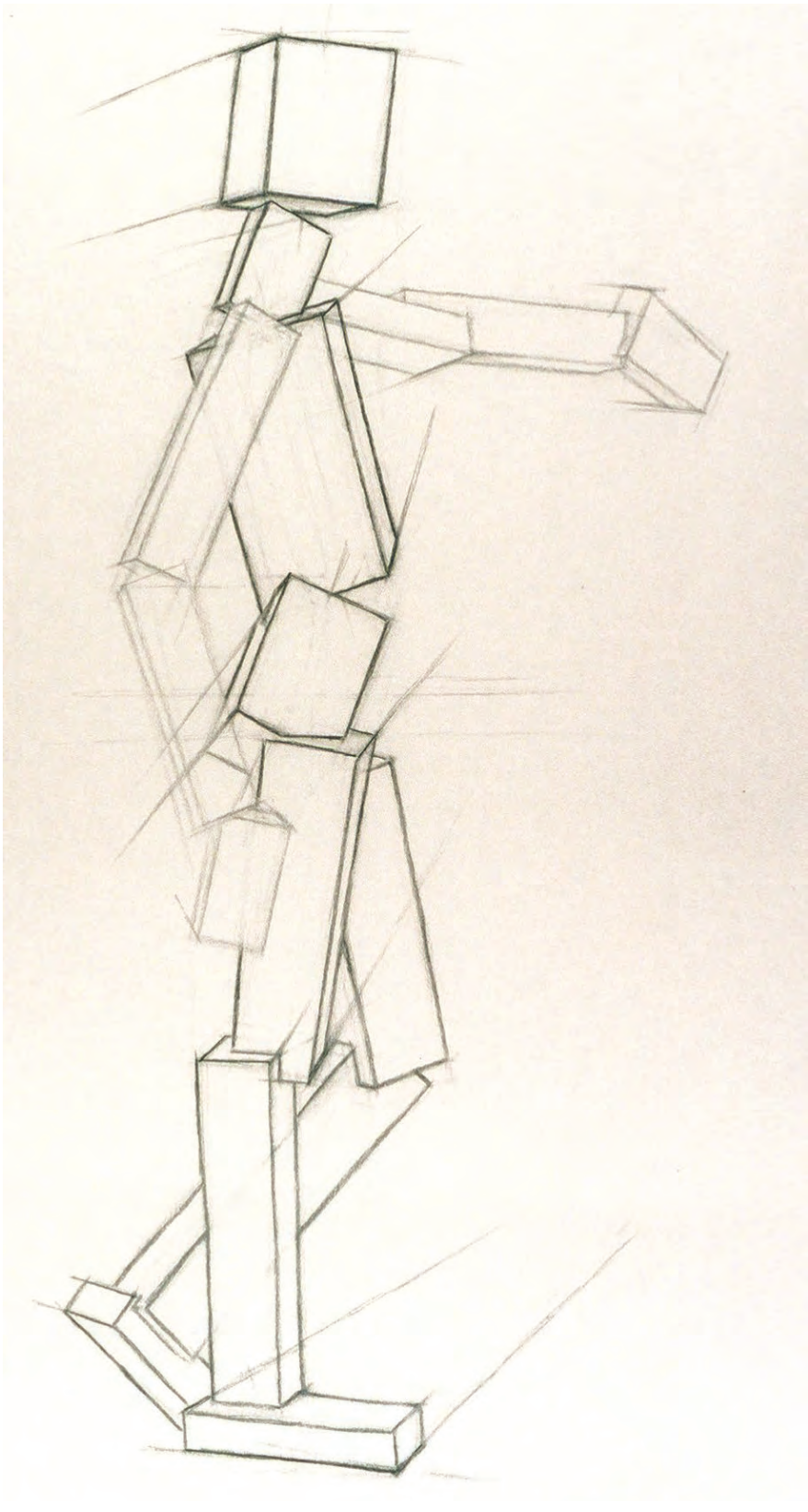
APPLYING THE CUBE TO FIGURES

The human body can be reduced to basic geometric volumes. The head, ribcage, and pelvis are the three main masses of the body, and they are connected by the vertebral column, which can independently tip, turn, and tilt. The front, side, and back views of the figure, built as cubes, illustrate the variety of these movements. Each mass is in a different position in space. Note the imaginary center marked on each mass, describing the orientation in space. Many artists find it helpful to use the cube to understand and re-create complex forms in nature, as shown in some of Luca Cambiaso's drawings.

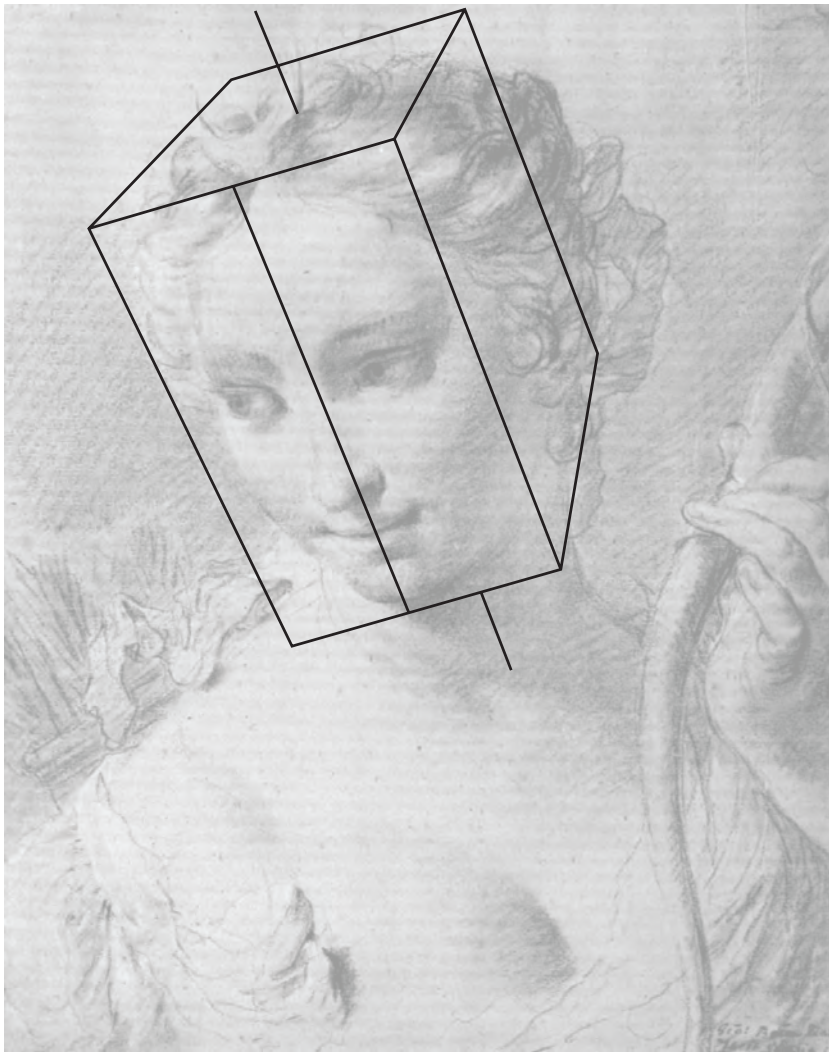
When imagining the head, ribcage, or pelvis as boxes, we find that they are rarely seen at predictable views but are continuously changing in their positions in space. Illustration 2 shows a series of rectangular cubes presented as a head thrown into different perspectives. In the center row and middle rows the cube is tipped and turned and all of their respective positions appear to be vanishing to a true horizon—that is, all lines are vanishing to the eye level of the viewer. The outside rows show the cube tipped, turned, and tilted, which means all lines are vanishing to a false horizon—they are no longer vanishing to the eye level. This is most often the case when drawing the head. Note the axis of the head that orients its position in space in Illustration 2. The axis is an imaginary rod running through the middle center of the mass.







Drawings After Sculpture by Eliot Goldfinger
by Jon deMartin, 2008, charcoal pencil on newsprint, 18 x 24.

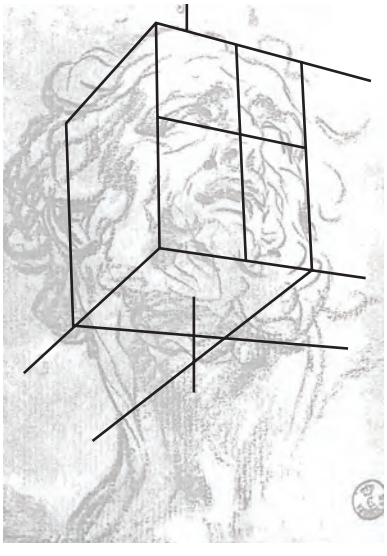


Good drawing requires developing the ability to depict anything so that it appears structurally correct and undistorted. By far the best method for learning to draw is to draw actual objects from life—not copying reproductions or photographs. Mastery comes through constant practicing of drawing skills. Keep nurturing your creativity while working on the more formal exercises. In the long view they will help one another.

ABOVE

Illustration 4: Tipped, Turned, and Tilted Head

drawing by Giovanni Battista Piazzetta, black and white chalk on toned paper.



RIGHT

Illustration 5: Tipped and Turned Head

Modeling Planes

Objects look convincing when a draftsman models the form correctly. Here, we take it step by step to ensure accuracy and a solid foundation.

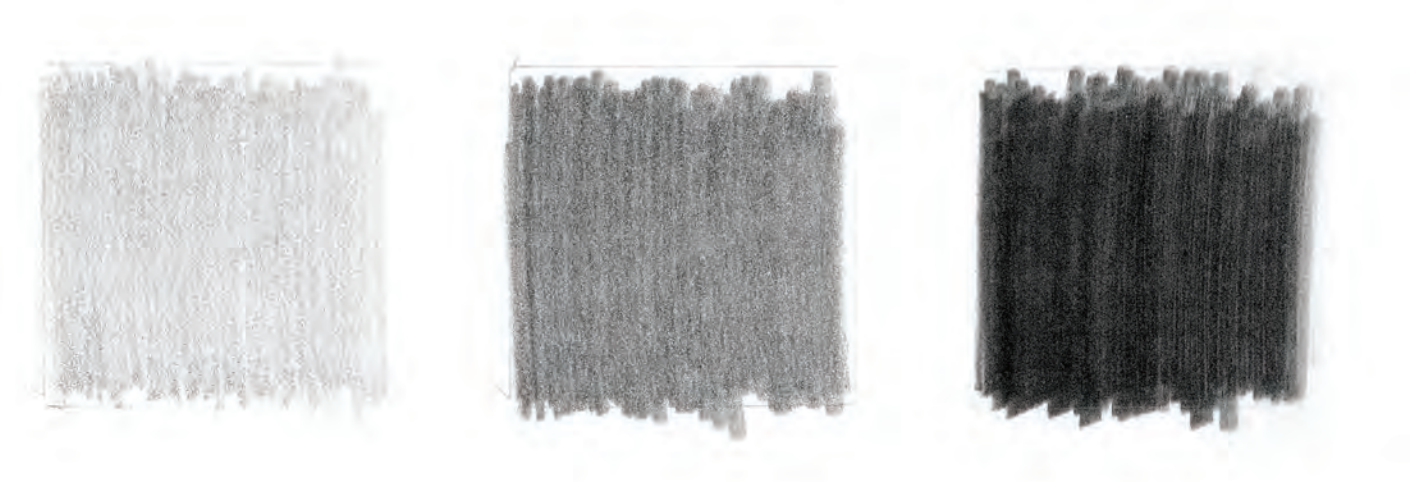
by Jon deMartin

Every artist wants to master the modeling of form, using value to create a third dimension in a drawing, so let's take a look at this fundamental task. It's a big subject, so we'll tackle simple concepts first. Let's begin with modeling the most basic geometric solid—the cube. The cube's planar surfaces are easy to draw and model because they're clear and unambiguous—cubes don't have confusing surface irregularities or changes of local color or texture. Nature's surfaces are generally curved, but manmade objects are often flat, as in walls, tabletops, and buildings. Plus, light and shadow are more discernible on a cube than on a curved surface.

Noted teacher and illustrator Frank Reilly once stated, "What you will learn on a simple form like a cube or sphere can be applied to a head, figure, or landscape. It will help you see the three-dimensional reasoning of nature. It will help you draw from memory and your purely creative attempts. Values relative to light and shade must be understood as a mirroring of nature before they can be seen as a personal explanation of nature. They must be clearly understood, first and last, by the observer."

It's advisable to practice making flat values before graded ones. A flat-value mass is produced by drawing even strokes parallel and touching one another to create a flat and even mass. Dark values are made by increasing pressure, and light values by decreasing pressure. Do not smudge graphite—

Illustration 1
Three simple swatches of value—light, middle, and dark tones.



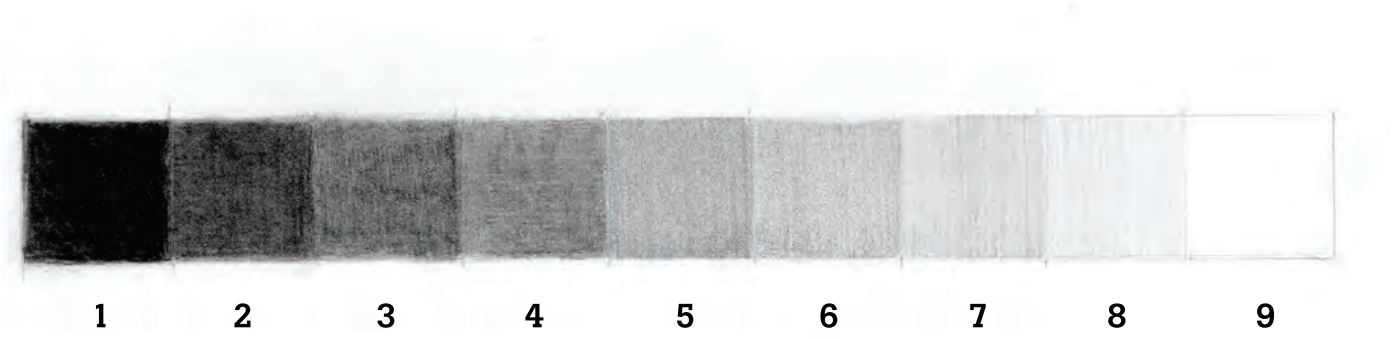


Illustration 2

shaded areas that are smudged have a shiny appearance. Try to avoid haphazard and uneven pressure on successive strokes when creating a graded area.

Illustration 1 shows three swatches of value—light, middle, and dark tones. Try to reproduce these flat values, then move on to tackle a value scale. Illustration 2 shows a value scale divided into seven gradations between black and white. The objective is to create a scale from the darkest dark up to the white of the paper and make the gradations as even as possible. Lightly pencil in nine equidistant spaces an inch apart, and number them underneath from left to right. Value No. 1 is black, on the far left, with values lightening up to No. 9, the white of the paper. The value scale in this illustration was made with a soft pencil for the darker values, a medium pencil for the middle values, and a hard pencil for the light values. There are several ways of determining if the values are graded evenly. The values should graduate smoothly without obvious jumps. The contrast at edges should appear the same throughout the scale. When in doubt, isolate any three consecutive values and make sure the value in the middle is not leaning more to one adjacent value or the other. Keep in mind that the artist's value scale is much narrower than what one sees in nature, because the white of the paper is nowhere near as bright as the sun, nor is black pencil as dark as the inside of a black velvet box.

Before shading, a draftsman must be certain that the object's outlines are drawn correctly and that the linear perspective in the composition is accurate. (See the fall 2008 issue of *Drawing,* page 22.) Once you solve the proportion of the object's shape and its shadow shapes in relation to the lights, you can free your mind to focus on the modeling (shading).

To practice, I recommend getting a white or light-gray cube with smooth surfaces, no smaller than three or four inches high. Illuminate the cube using a single light source, natural or artificial, from above left with one side of the cube completely in shadow. The ground underneath the cube should be neutral middle to dark gray and should not have a shiny surface. Ideally, a neutral middle-gray background can be placed at a relatively short distance behind the object.

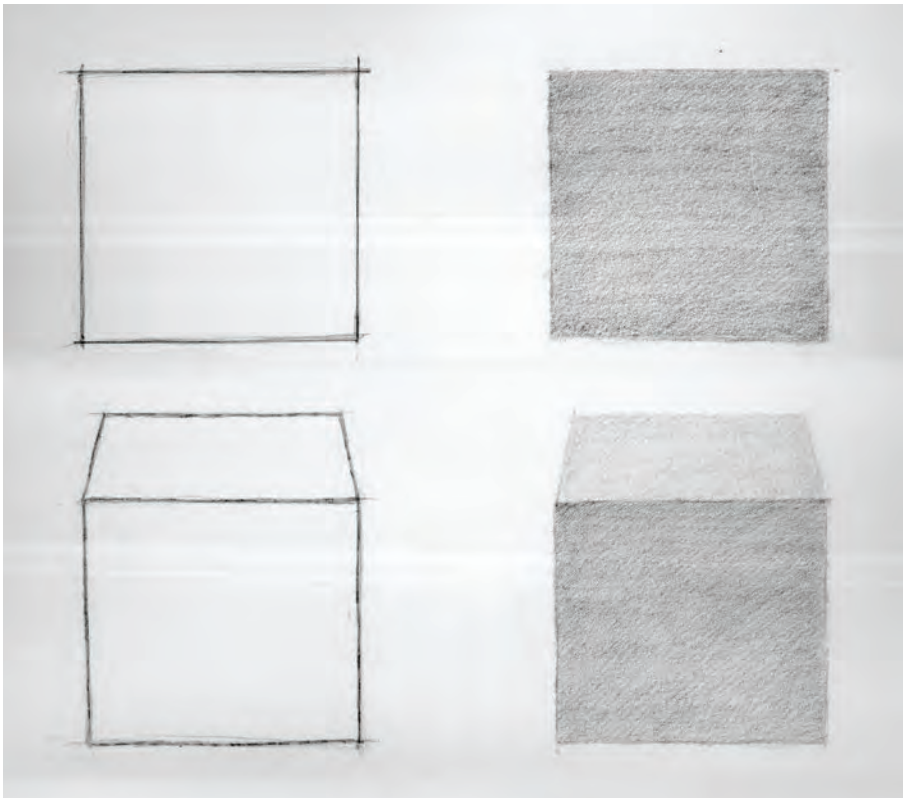
Next, prepare an outline of the contour lines and the edges of the major planes. Keep your lines as light as possible so that they don't interfere with the values you'll be modeling. If they are too dark, lighten the lines with a kneaded eraser until they are just a guide for the areas to be shaded. After drawing the outline that bounds the form's shape, draw the shadow line that divides the overall light from the overall shadow. First mass in the shadow with a value lighter than what you see on the cube—this initial stage is only a preparatory phase for modeling, and your light touch enables you to make corrections before pushing the drawing toward finish.

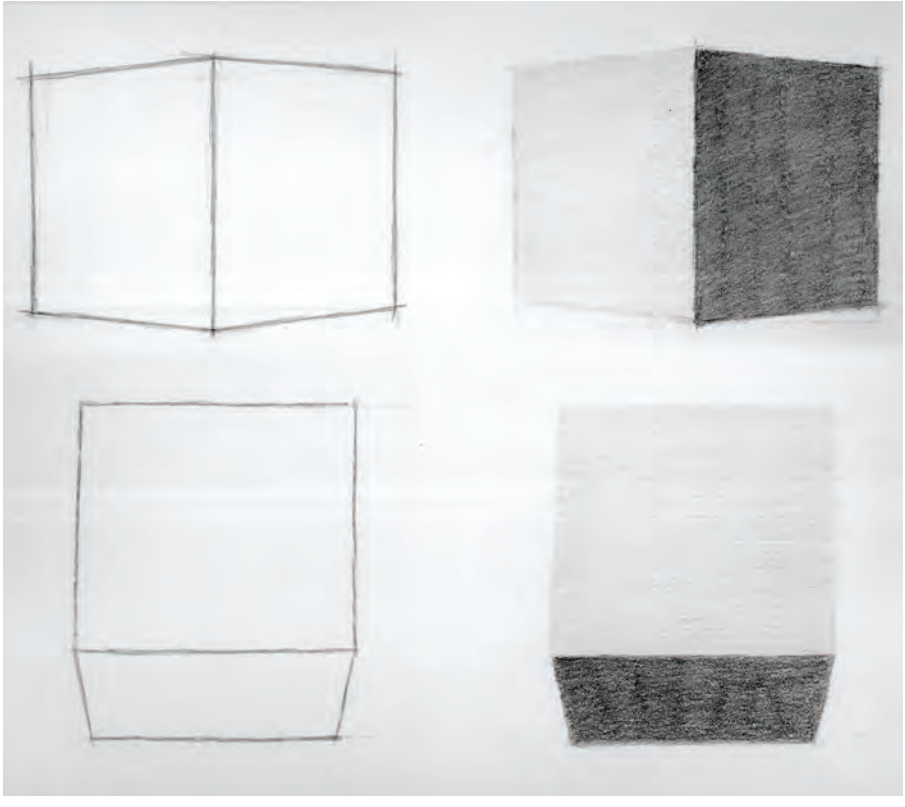
By using your value scale to help determine the relationship of your lightest light to the darkest dark, you can relate all your values in between. Never take for granted that the values you observe in nature will fall into one of the squares on your value scale. The value scale is designed only to give you a reference point so that you can make better value comparisons. While draw-

ing, continually compare your values in the light to your shadows. Put in your shadows first, and gradually build up the values in flat areas as the drawing develops.

You may notice that the portion of the shadow plane that is nearest the light will look darker than the other areas of the same shadow. This is called the law of contrast in Michel Eugène Chevreul's 19th-century book *The Principles of Harmony and Contrast of Colour and Their Applications to the Arts*. He wrote, "The shadows on objects are stronger nearest the eye, and they decrease in strength and intensity in proportion to their distance." This is the first rule of aerial perspective, which can apply to a local condition as well. This can be observed on the illustration of the value scale where the darkest part of each value appears to be at the edge where it meets the lighter value. In other words, the contrast looks greater where the edges meet.

Practice drawing cubes in different perspectives under the same light condition to explore how the changes of planes dramatically affect the values. Illustrations 3, 4, and 5 show six rows of cubes, rendered in both line and value, from different vantage points. The cubes on the





ABOVE RIGHT

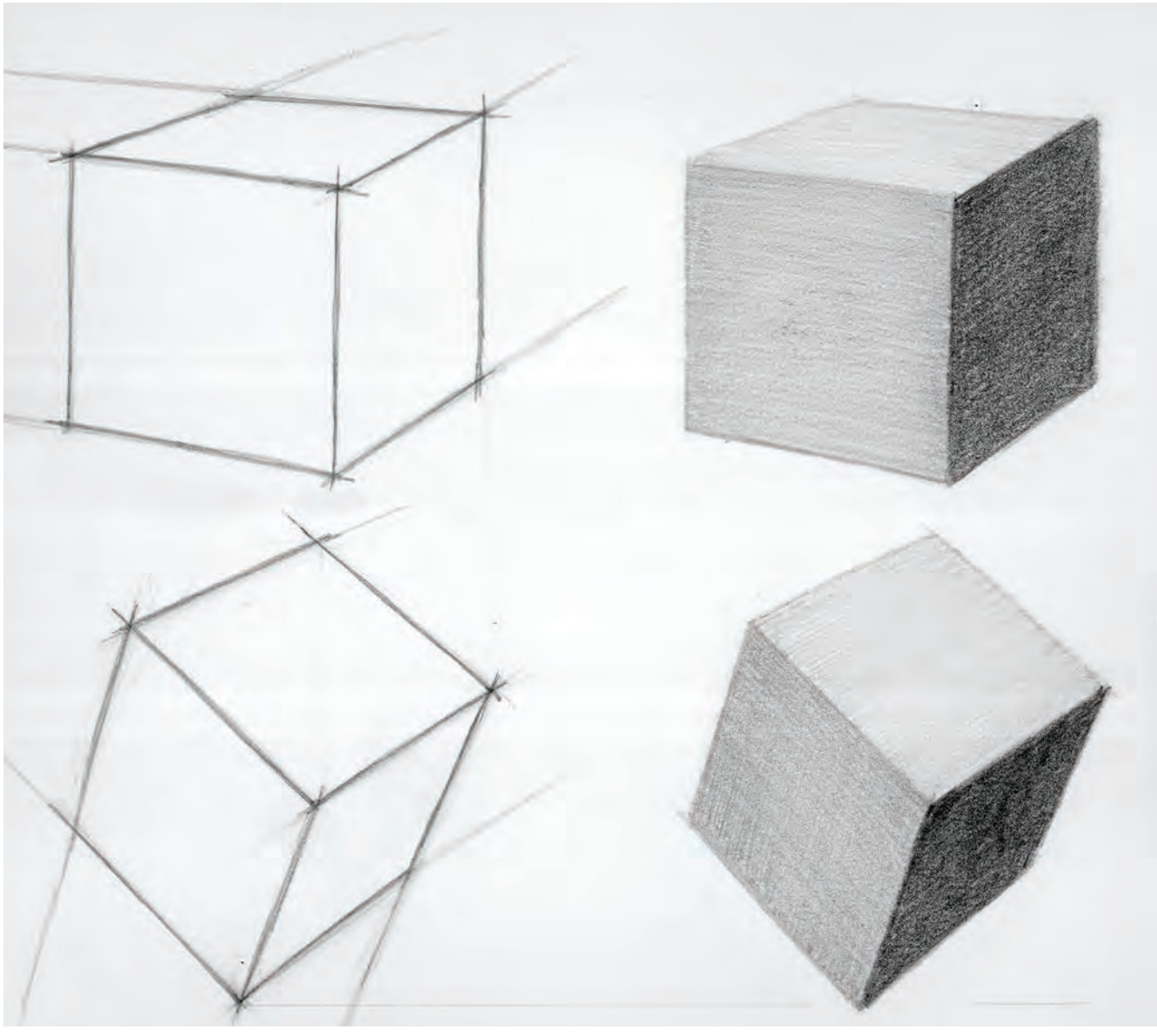
Illustration 3

Changing the vantage point of the viewer allows two planes of the cube to show, as demonstrated in the second row.

RIGHT

Illustration 4

Here the vantage point is seeing the edge of two planes of the cube. In the second row, the vantage point is from below.



ABOVE

Illustration 5

Three planes are visible from this vantage point: top, front, and side right. This is the most challenging of views—and the one most similar to the orientation of the human head.

RIGHT

Illustration 6

The plane changes created by this vantage point.

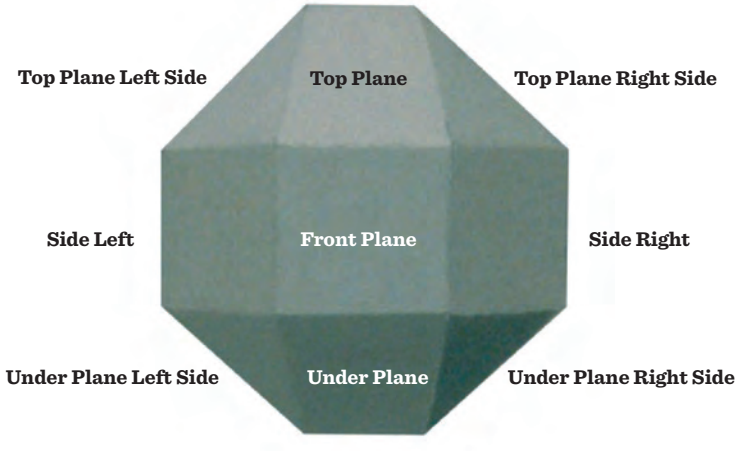
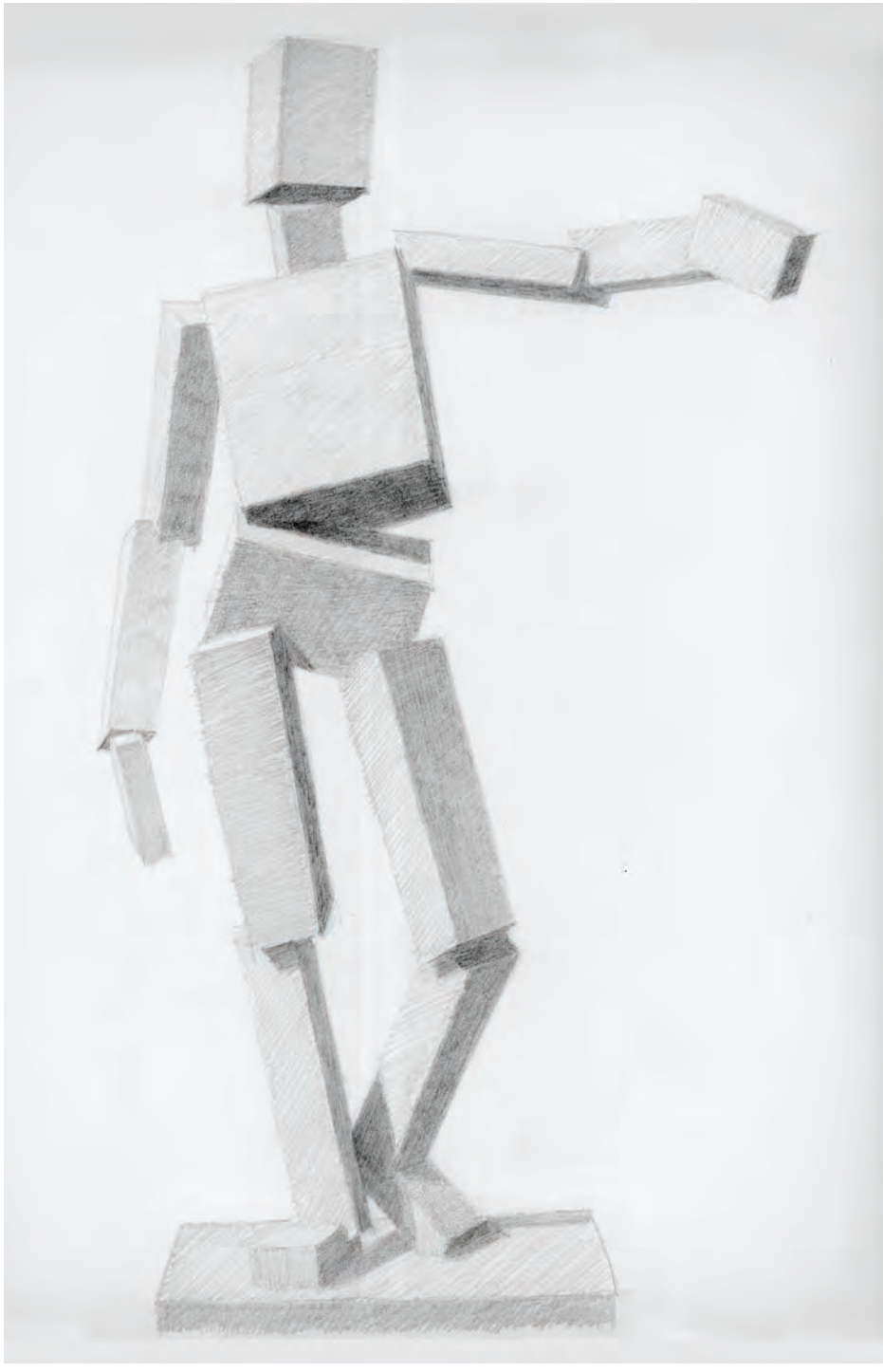


Illustration 7
by Jon deMartin, graphite, 18 x 12.

A front view of the Cube Man, based on a sculpture by Eliot Goldfinger.



left are drawn with just lines but read volumetrically because they reveal the interior plane line divisions. The cubes on the right read volumetrically because of their value relationships. Remember, in modeling form, plane and value are synonymous (or interrelated). The first row of Illustration 3 shows only one plane and value because the eye is looking directly at the cube's center. In the second row, the eye is looking from above, showing two planes: top and front.

In Illustration 4 the first row shows two planes meeting at the corners. The second row is the reverse of the second row in Illustration 3; the eye is now looking from below, showing two planes: bottom and front. Illustration 5 shows three planes: top, front, and side right. The cube in the bottom row is tipped, tilted, and turned, vanishing to a false horizon. This is the most challenging of all views, and it's similar to what a draftsman faces when depicting a human head. All the other cubes in these illustrations are vanishing to a true horizon. The schematic in Illustration 6 shows the different plane changes.

The ability to identify planes is crucial to modeling form. The figures of the Cube Man in Illustrations 7, 8,

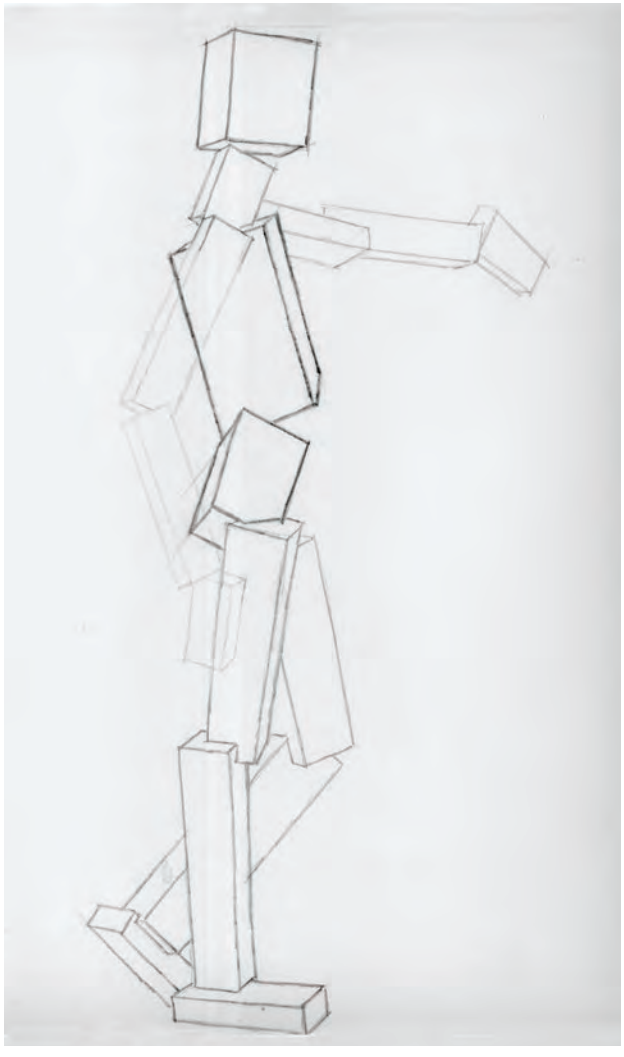


Illustration 8
by Jon deMartin, graphite, 18 x 12.

A side view of the Cube Man.

and 9 clearly show how plane changes impact values. In Illustration 7, the front view, the rectangular block that is the ribcage is light because it's a top plane, and the pelvis is darker because it's an under plane. To reinforce this concept of plane directions, the artist should observe the pose from different views. For instance, Illustration 8 shows the side view drawn in line and clearly indicates the planes' directions. Notice that in the back view in Illustration 9, the ribcage is darker because it's going under, and the pelvis is lighter because it's a top plane—the reverse of the front view in Illustration 7.

Materials For Modeling With Values

A graphite pencil is the simplest, most direct, and most valuable of all art tools. It's an excellent tool for both drawing lines and filling in shaded areas. It's basically a line medium rather than a broad area or planar medium, and it can be used sketchily or more carefully. However, if a graphite pencil is used too heavily it will produce a shiny appearance in one's artwork, and it will be susceptible to smudging. Hard pencils tend to break if pressed too heavily in an effort to produce a dark line. Dark lines and shadings instead should be drawn with soft pencils, which do not require great pressure. Use a sharp pencil point. In terms of surface, finer-grained paper lends itself better to graphite; rough papers produce a coarse, grainy look.

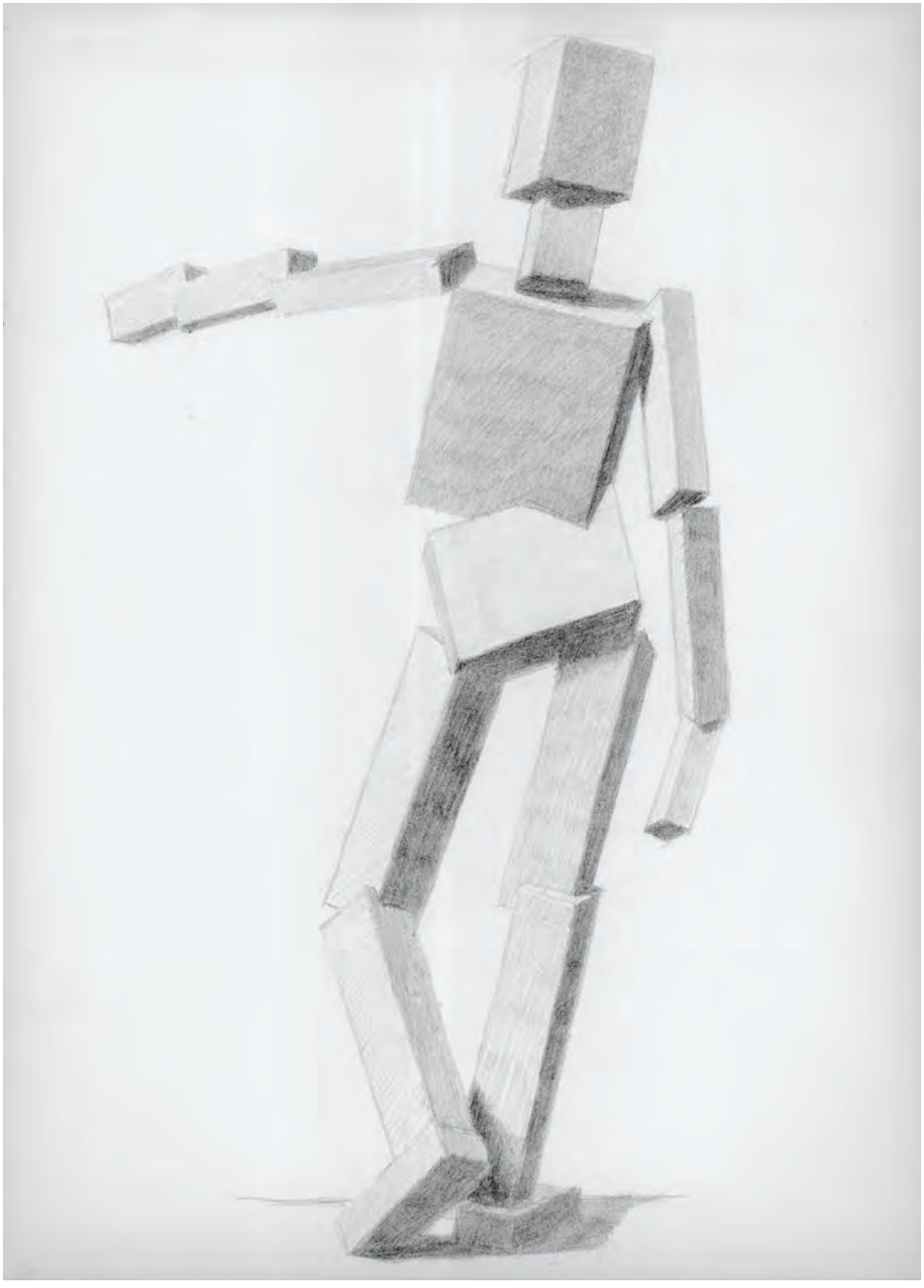
For sharpening pencils I prefer a single-edge razor blade, which I use to shave away the wood around the pencil point. I slowly rotate the pencil between my fingers using long shaving strokes so that my pencil has a long, sharp point. This way my lines can be crisp and last a long time before I have to resharpen.

Charcoal or carbon pencils can be preferable to graphite pencils because they don't leave a sheen, and they can produce darker darks than graphite. The drawback is that they're less controllable, but this can be overcome with practice.

A kneaded eraser is perhaps the best eraser to use when working with graphite or charcoal. It can be shaped to a point to reach small areas without affecting the rest of the drawing, and it will remove pencil marks without marring the surface of the paper.

Illustration 9
by Jon deMartin, graphite, 18 x 12.

The back view of the Cube Man. Notice how the ribcage is darker because it's going under, and the pelvis is lighter because it's a top plane—the reverse of the front view in Illustration 7.



Up to this point we've been talking about values that run top to bottom. In the front view in Illustration 7, you can also see plane changes running from side to side. The front plane of the right thigh is facing the viewer, and the left is rotated outward, becoming a side-right plane. Notice how planes that go to the side darken. (See Illustration 6.)

Drawing simple objects enables an artist to master the basics. By taking baby steps toward what nature shows us, we can build on a sure and solid foundation that will help us become better artists, allowing us to express our visions of the visual world.