7   Choosing (and Understanding) the Right Path Tools

I f you thought learning to create basic shapes and modifying them in Chapter 5 was a fun learning experience, then hold on: basic shapes will basically get your work only so far. CorelDRAW's path building and editing tools are at your disposal to create *exactly* what you envision. The Curve Tools group on the Toolbox has tools that make any shape you can imagine (and some you *can't*) a snap to design. In the following sections, you'll work through the *editing* process of lines and their nodes, so there's no reason to draw something that's *close* to what you need. This chapter is the "DRAW" part of CorelDRAW. Incidentally, the Artistic Media pen is no longer part of this Curve Tools group; it has its own icon on the Toolbox, and the Smart Drawing tool is covered in Chapter 8 because it's of enormous use to novices whose jobs require them to instantly become graphics designers. *Experienced* users will enjoy Chapter 8, too!

Note   Download and extract all the files from the Chapter 7.zip archive to follow the tutorials in this chapter.
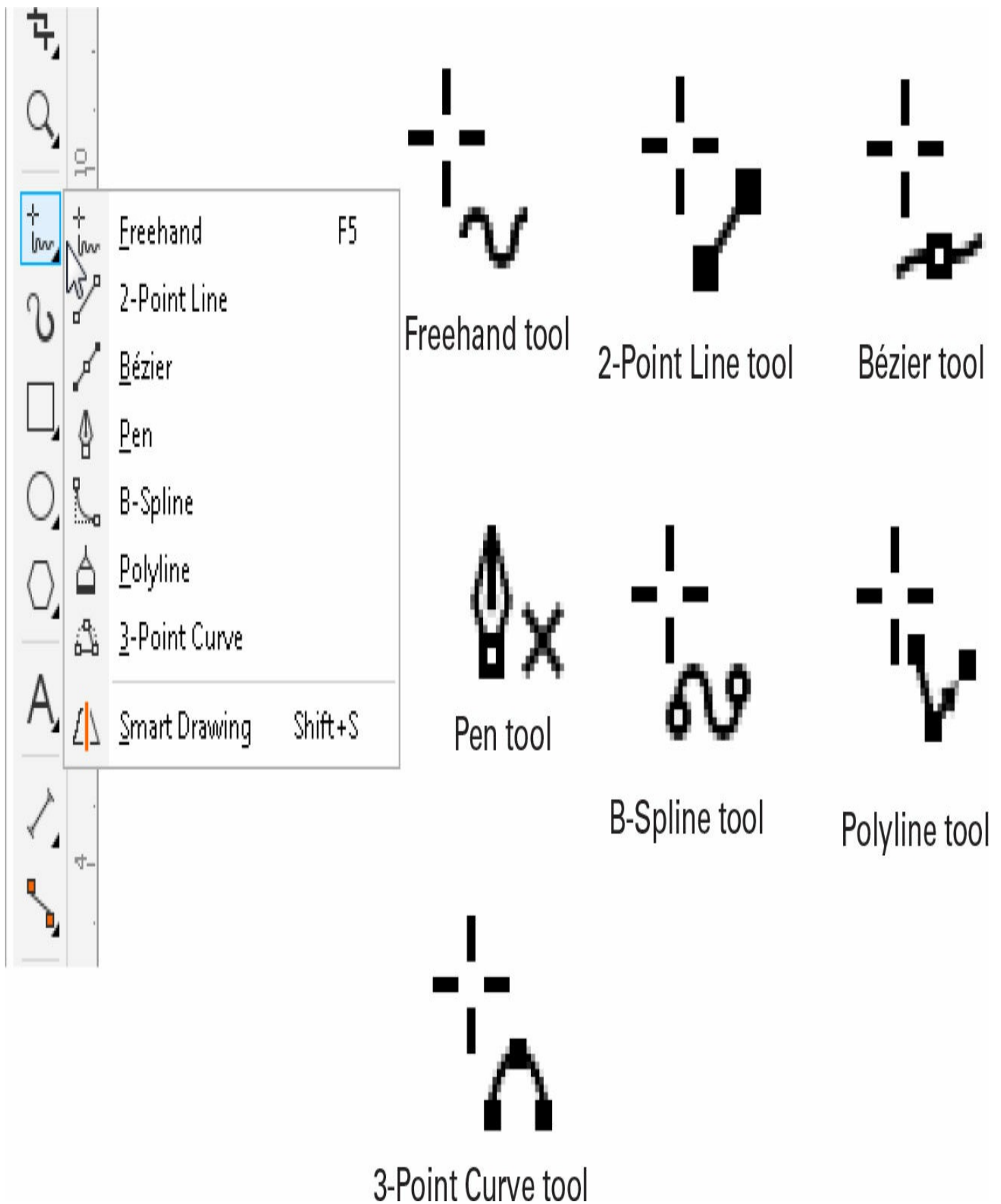
Sidling Up to CorelDRAW's Curve Tools

The most basic shape you can draw in CorelDRAW (and any vector drawing program) is a *line:* a line is a path that passes through at least two *points*, called *nodes* in CorelDRAW. A line is actually a mathematical equation, and as such, it doesn't necessarily have an outline color and a width, and it doesn't even have to be a *straight* line. However, a line *does* have a *direction;* that is, the direction in which you draw the line. This might seem obvious or trivial, but vectors *do* have a direction, and you can get arrowheads on the wrong end of a line, and all sorts of unwanted stuff, if you fail to remember the basic properties of a vector graphic.

There are scores of different properties to which you can assign a line, such as

arrowheads and a dashed outline around clip-out coupons. You can also assign solid colors and varying widths to complete any assignment. Joining the beginning and end points of a line (a path) closes the path. If the beginning doesn't meet the end point, the shape is called an *open path*.

CorelDRAW X8's Curve tools are task-oriented tools; although they all produce paths, your choice of tool(s) for a task depends on what it is you want to draw. For example, do you need to produce an object whose curves are flawless—like those of a physical French curve? This task calls for the B-Spline tool. You can also "mix and match"; that is, you can begin an object with one tool and then finish it with a different tool. Your choices depend on the object you want to create. Some of these tools work similarly, so it's best to become acquainted with what the cursors *look* like, as shown in Figure 7-1.

Freehand   F5

2-Point Line

Bézier

Pen

B-Spline

Polyline

3-Point Curve

Smart Drawing   Shift+S

Freehand tool

2-Point Line tool

Bézier tool

Pen tool

B-Spline tool

Polyline tool

3-Point Curve tool

FIGURE 7-1 **For visual reference while you work, each of the different drawing tools has a unique cursor.**

How to Draw in CorelDRAW

Although you can use the Artistic Media tool and its variants to "paint" in DRAW, this nicety is covered in Chapter 13. Right now, we're talking technique and proficiency with vector shapes made of straight lines and curves and connected by nodes. In the Curve Tools group, you'll find CorelDRAW's path and node-creation pens; they're used for both accuracy and artistic expression, and they have varying degrees of ease of use that correspond directly to their power.

Drawing with Freehand and Polyline Tools

The *Freehand* and *Polyline tools* share a common function, giving you the freedom to draw as if you were sketching by hand on a physical sketchpad, but the tools work in slightly different ways. Sketched lines can create a single open or closed vector path. Both tools are located in the Toolbox, grouped with other line-creation tools.

For mouse users and stylus users alike, click-dragging initially produces a start node for a path segment, and then a node is placed when you release the mouse button (or stylus), setting the end of the path segment. Here's how to use these tools:

1. Begin by selecting the Freehand tool.
2. You can create a continuous line by click-dragging a path shape. As soon as the mouse

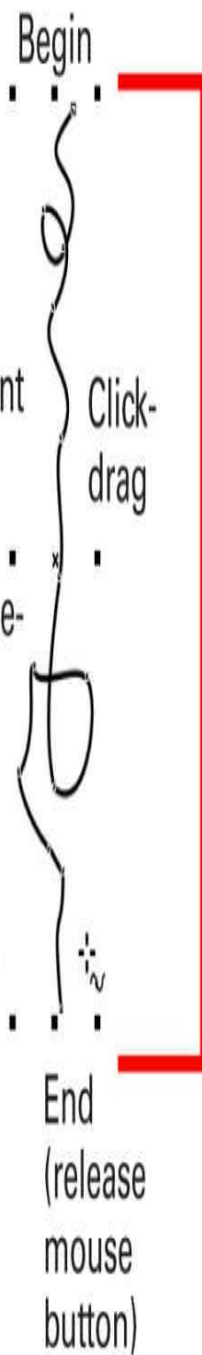button is released, the line is complete, as you will see on the left in Figure 7-2.

Freehand Tool Cursor States

Totally Freehand Path

Freehand Path Mixed with Lines

All Lines

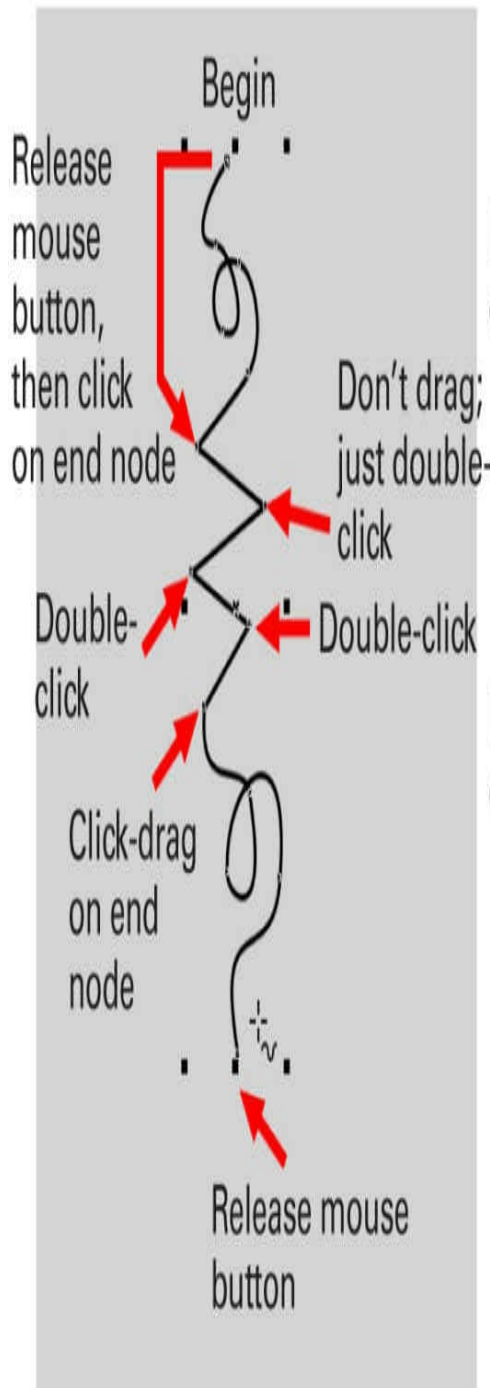Click to begin a straight line segment or click-drag to make a freehand path.

On the last segment node, click-drag to add freeform segment, or double-click to begin a new straight line segment.

(Click, then) move cursor with no mouse button pressed. A line is being created. A single-click ends the segment, and a double-click extends the path.

Begin

Click-drag

End (release mouse button)

Release mouse button, then click on end node

Begin

Double-click

Click-drag on end node

Don't drag; just double-click

Double-click

Release mouse button

Single-click to begin path

Double-click

Double-click

Double-click

Double-click

Double-click

Double-click

Double-click

Double-click

Single-click to end path

3. To *extend* this path—that is, to *add* a path segment after the first segment's end node—you position your cursor over either the beginning *or* end node. The cursor now features a tiny bent arrow, as shown in Figure 7-2. To continue with a freeform path, you just start click-dragging again.

4. Now, let's say you want to extend this path with a straight line segment or two. Instead of click-dragging on the end node of the previous segment, you click and then release the mouse button; the cursor turns into a little line segment icon, and wherever you want to end this segment, you single-click.

5. If you want to keep going with straight line segments, don't just click an end node and move your cursor; instead, *double-click* an end node, and you are now creating a new line segment that is joined to the previous line segment by a node.

6. To create a path that only has straight lines, you single-click and then move the cursor and double-click each time you want the line segment ended and a new one begun. Figure 7-2 shows the result on the right, and what the cursors look like and do depending on their position over the page or the path. Do not freak out at the apparent complexity of this figure! It's a treasure map to mastering the Freehand tool.

The Polyline tool, on the other hand, can be used similarly to the Freehand tool, except only a single-click adds a node, and you can continue to add path segments. You'll notice that when you click-drag with the Polyline tool, your curves appear smoother, and this, like the Freehand tool, might serve digitizing tablet users the most. The following illustration shows the standard method for using the Polyline tool.

The Polyline Tool: Standard Method

click

click-drag

release

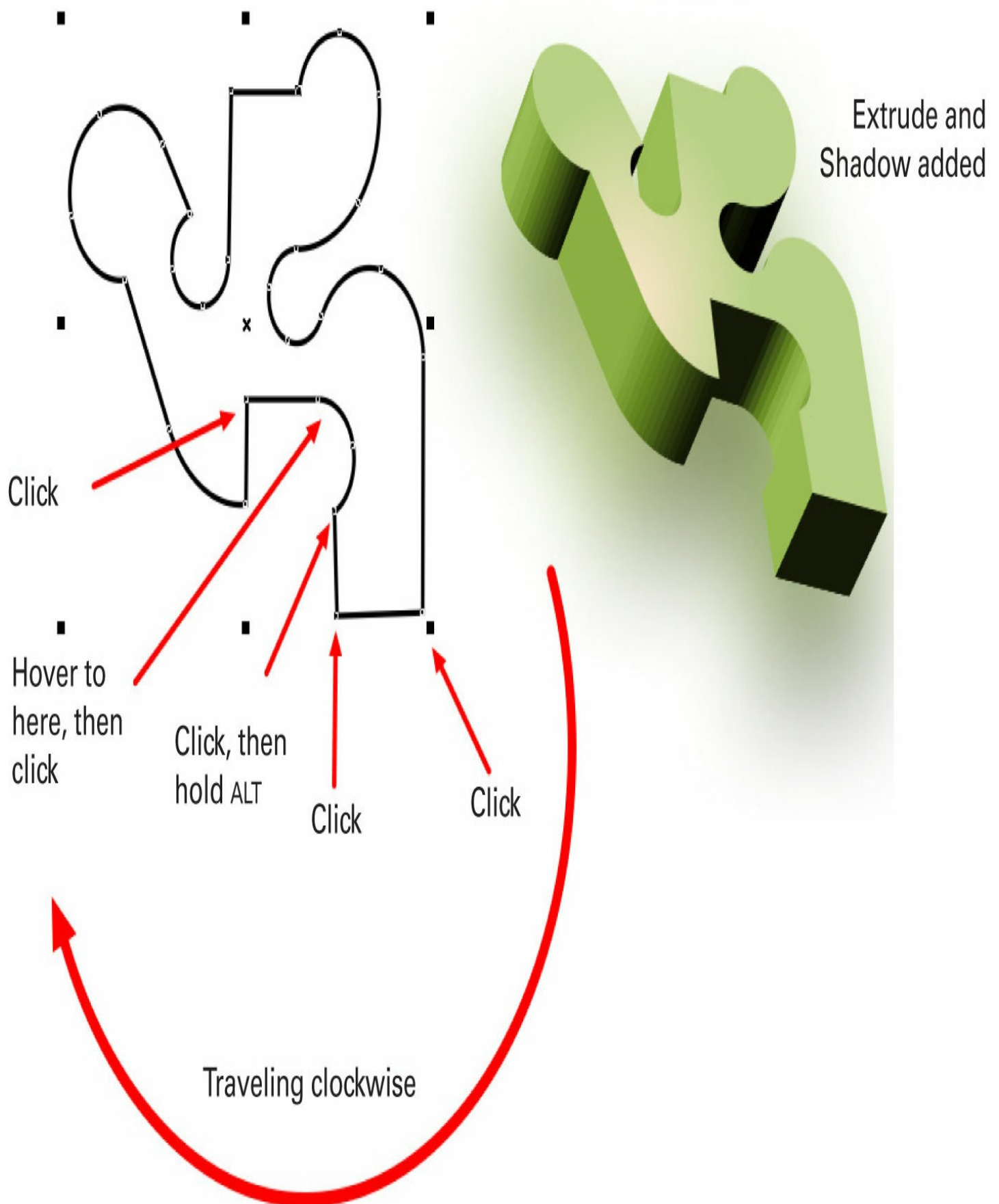click

click

click

click-drag
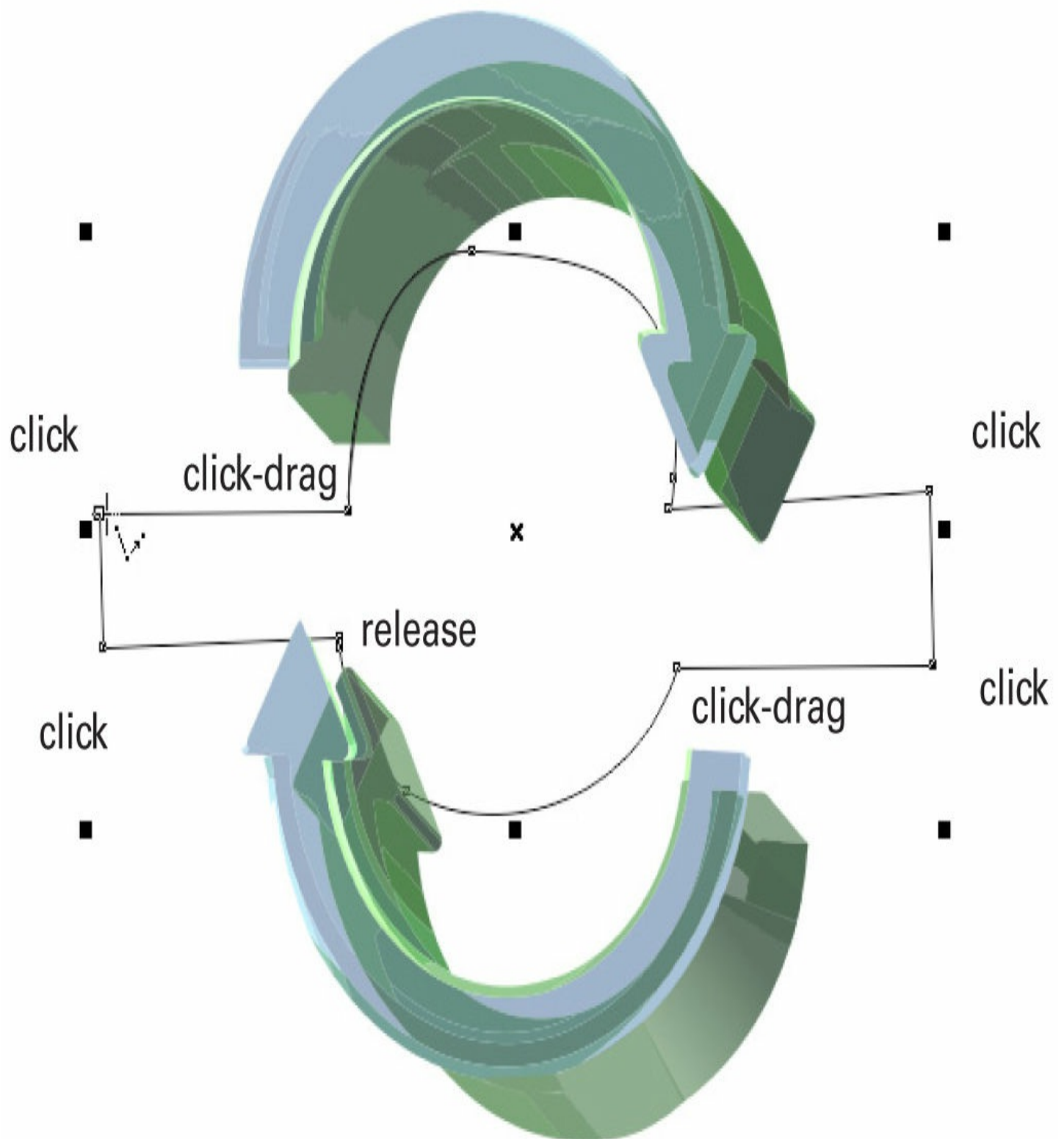
click

Note A *single*-click using either the Freehand tool or the Polyline tool at the beginning of a path closes the path, and it then becomes an object that can be filled, extruded, or perhaps even sold as Fine Art.

There is an *extended* function of the Polyline tool that lets you draw straight lines, mixed with perfectly circular arcs if you single-click the end of a straight line segment, hold ALT, release the mouse button, move the cursor position (this is called *hovering)*, and then single-click. The illustration here shows that with a minimum of patience and a good idea in your head, you can easily create French-curve-like abstract objects. If you want your work to be an open path, double-click when you're done with the pen.

The Polyline Tool: ALT Method

Click

Hover to
here, then
click

Click, then
hold ALT

Click

Click

Traveling clockwise

Extrude and
Shadow added

Tip You can use the Property Bar options to make any open path begin with an arrowhead, make the line—open or closed—into a dashed line, and change the stroke width.

Using either of these tools, you have control over the smoothness of path shapes drawn using click-drag actions by adjusting the Freehand Smoothing option in the Property Bar *before* drawing your path. You can control smoothness after *drawing* a path by selecting nodes with the Shape tool and then using the Reduce Nodes slider. Reduce Nodes has a range between 0 and 100 percent; lower values apply less smoothing, and higher values apply more smoothing, as shown here.

Original freehand path (no smoothing)

Freehand smoothing
Adjust the smoothness of freehand curves as
you create them.

16
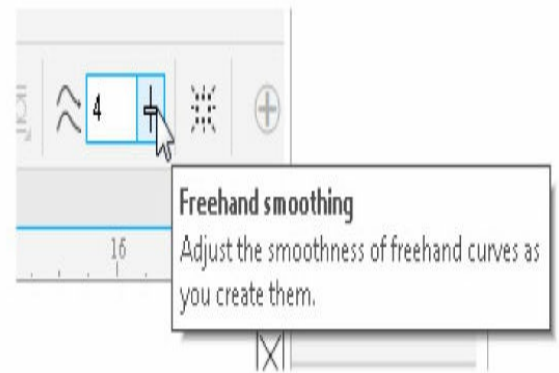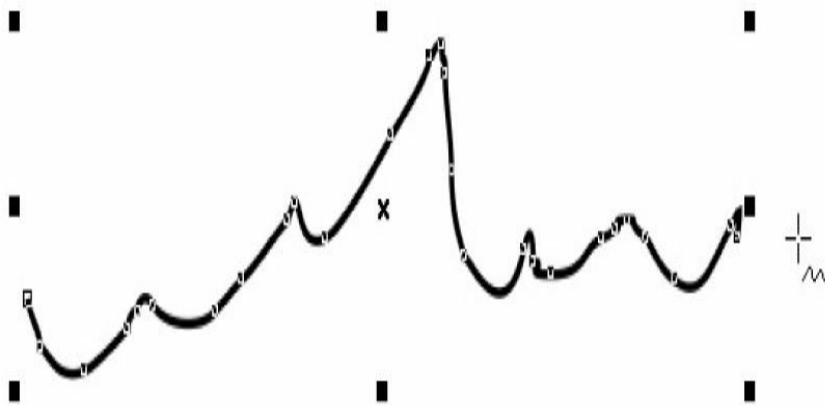
Path after Reduce Nodes

71

11   12   12   inch
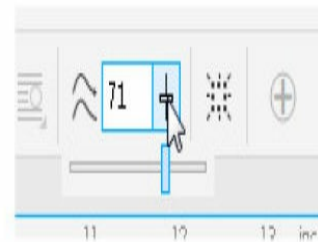
Drawing Arcs with the 3-Point Curve Tool

The *3-Point Curve tool* was created for artists to build perfectly smooth arcing line segments, with complete control over the direction and steepness of the curve between two points. First, you hold-drag the tool to set a straight line that defines the angle of the curve. This sets the start and end points for the curve. Then you release the mouse button and hover the cursor to define the slope and degree of the curve; you're provided with an onscreen preview until you decide and click a point and thus create the curve. Figure 7-3 shows the process, and additionally how to extend the curve with a second segment to close the path so it can be filled. This is the basis for the tutorial to follow, where you'll

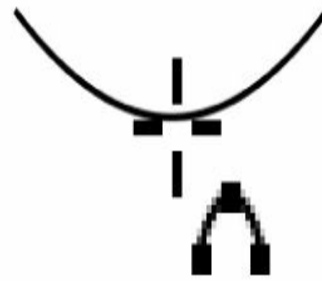create flower petals on an almost-completed illustration. Let this figure be your graphical guide.
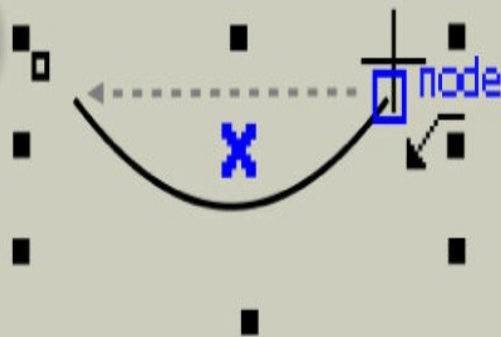
❶

Start

Release
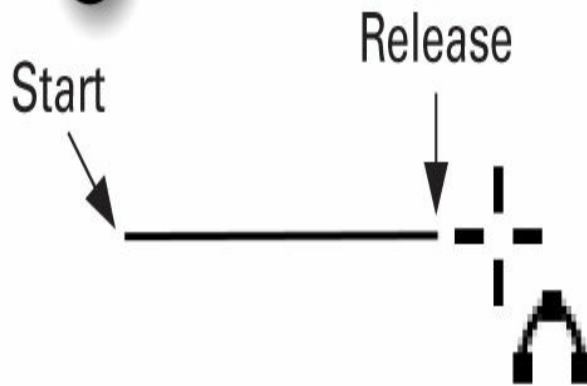
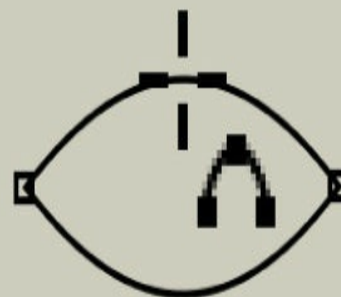Click-drag to set the orientation and length of the curve.

❷

Hover to set the bias and tension of the curve, then click.
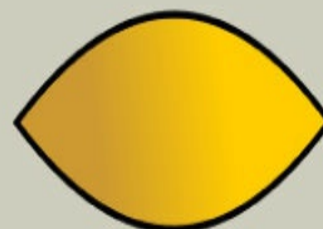
❸

node

X

Hover to locate the node. Click-drag to the opposing node to extend the path.

❹

Hover to set the bias and tension of the curve, then click.

FIGURE 7-3   **A 3-point curve can be adjusted at every step of its creation.**

Terms such as *angle* and *slope* don't adequately describe the characteristics of a curve to anyone other than a geometry professor. Therefore, here are two additional, slightly nerdy but highly accurate terms describing the characteristics of a curve:

- **Bias**   When you draw an imaginary straight line through the end points of any curve, *bias* describes which of the two end points the curve leans toward.
- **Tension**   Similarly, when a straight line runs through the two points that define a curve, *tension* describes how close or how far the curve's farthest point is from the line.

The following illustration shows examples of tension and bias. When you click on a control point (a node) on a CorelDRAW path, the curve's node sets the tension and bias, while the control handles address the heading of the path—the vector direction in which the path is going.

Bias leans right

Tight tension

Bias leans left

Loose tension
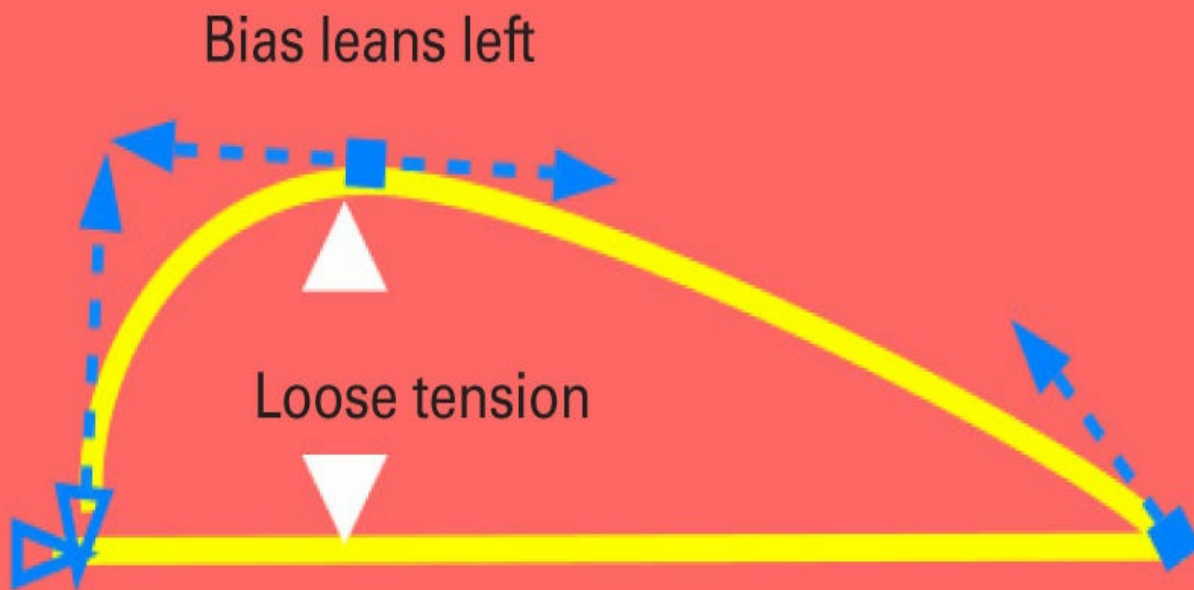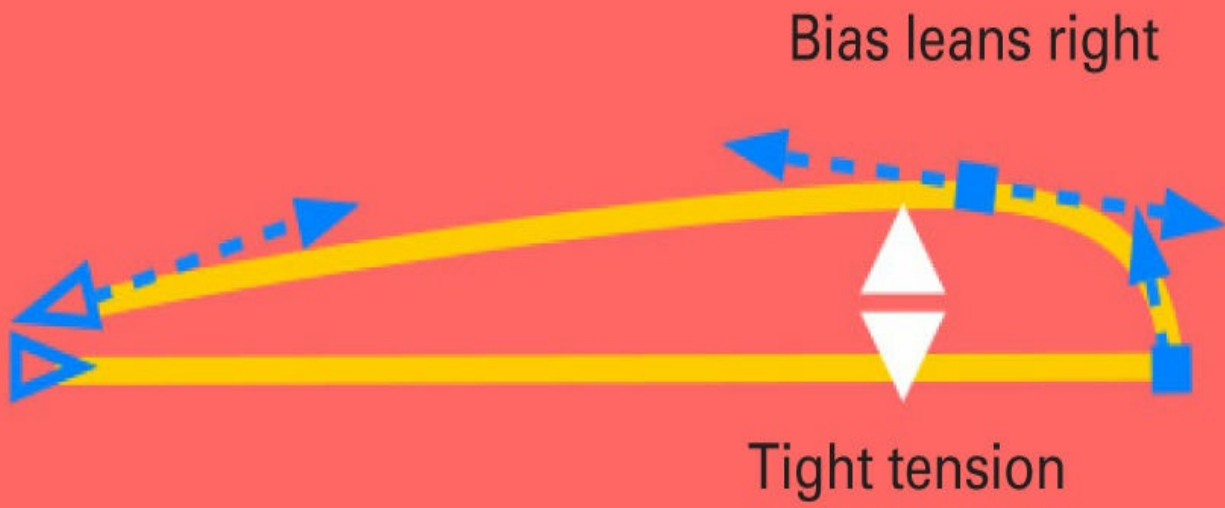
You'll quickly discover that part of the power of the 3-Point Curve tool is its use in building a series of connected arcs; you can design French curves and ornamental borders by creating a 3-point curve, positioning your cursor over the end point until you see the cursor signifying an extension of the last-drawn curve, and then building another 3-point curve.

In the following steps, you'll create a cat's eye object that will serve as both a leaf and a flower petal to complete an illustration.

3-Point Curves and Closed Objects

Tutorial

1. Open Flower and Vase.cdr. The white outlines are where the petals should be drawn, and this overlay is on the Guides layer, which is locked. The center of the flower is on a layer above the current layer, and it and the background illustration are on locked layers, so there is nothing to accidentally move.
2. With the 3-Point Curve tool, click-drag across any of the Guides, beginning at one point of the petal guide and ending at the other. Release the mouse button and then hover below the line until the curve basically matches the curve of the guide; then click to make the 3-point curve.
3. Hover over the right node of the curve until your cursor features an arrow and the word *node*. Then click-drag to the opposite point on the underlying curve. You're extending this original curve. Release the mouse button when the cursor signifies that it's over the second point with a tiny arrow.
4. Hover and let the curve arc upward until it matches the underlying curve guide; then click. You now have a closed path that can be filled (see the left side of Figure 7-4).
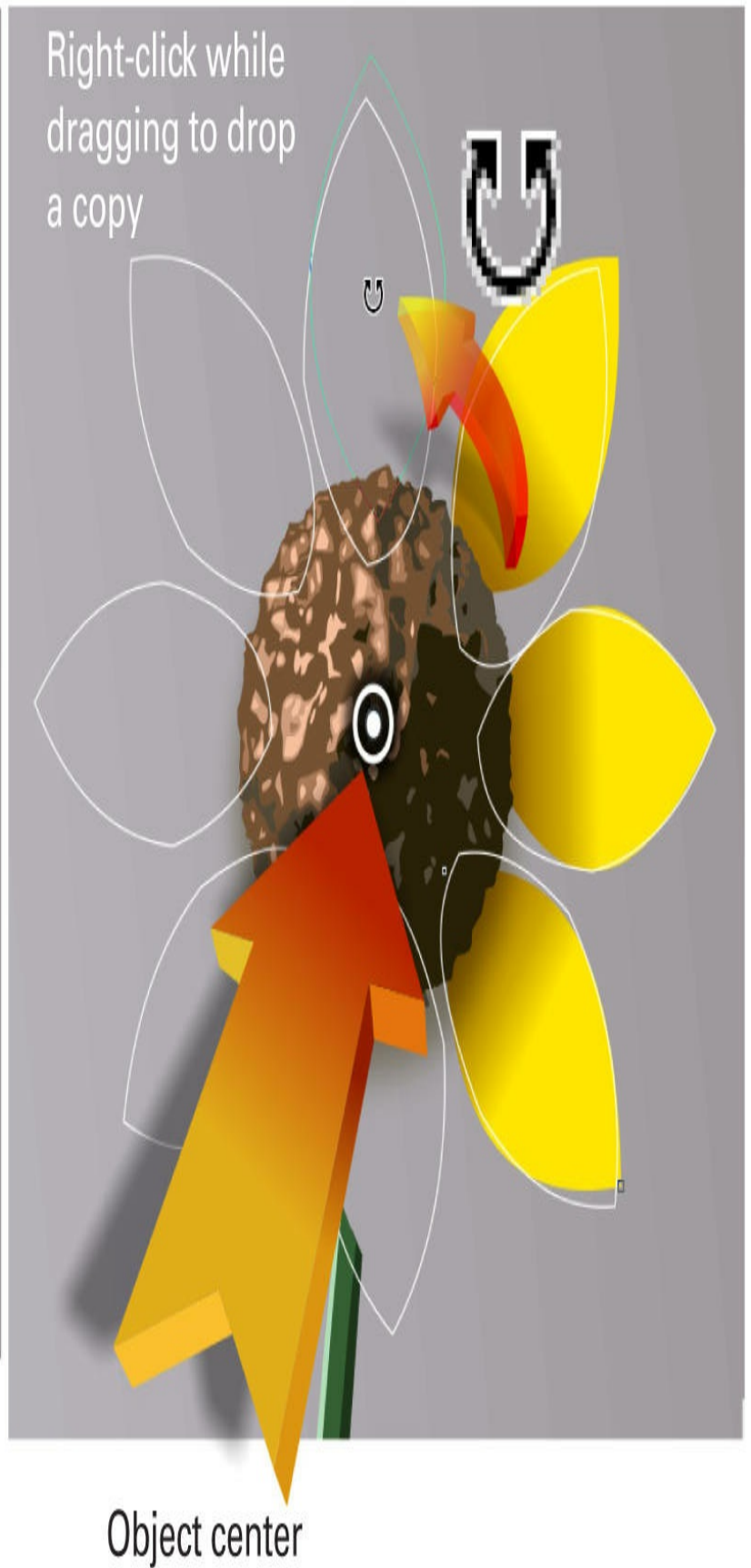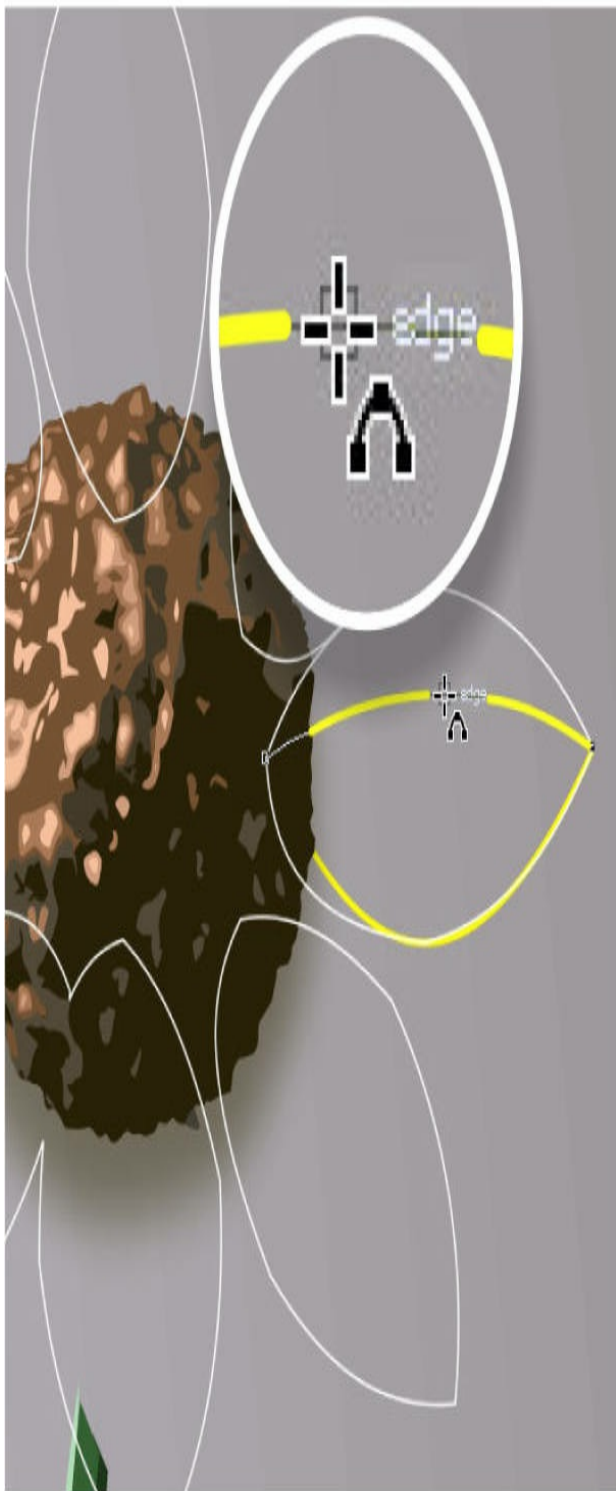
FIGURE 7-4 You can create smooth, connecting arcs quickly using the 3-Point Curve tool.

5. With the Interactive Fill tool, drag from the tip to the base of the petal object (look ahead to Figure 7-4). Then drag a brown color well from the color palette to the left (the From color) marker, and, finally, drag and drop a yellow-orange color well to the right (the To color) marker.
6. With the Pick tool, move the object center marker to the center of the brown object—the disc florets of my attempt to draw a Black-Eyed Susan.
7. Click the selected object to put it into rotation mode. Drag the top-right selection handle down; before releasing the mouse button, tap the right button to drop a copy of the object onto another unfilled guide object. The process is shown on the right side of Figure 7-4.
8. Repeat Step 7 until you have all seven petal guides filled with duplicates of your object.
9. Drag and (right-click) drop an extra petal near the empty leaf guide on the illustration's stem. Rotate it into position and fill it with a linear gradient of two different shades of green. Save your work and be sure to water it about every two to three days.

Here's the finished drawing:

The 2-Point Line Tool

This is the most self-explanatory tool in the Pen tool group: you click-drag at any point on the page, and when you release the mouse button, the line is completed. Although this might seem like a "toy tool" compared to the others, it's actually very useful for callouts in technical manuals, and it was used extensively in this book. For callouts, create a line, assign a 2-point weight, and add an arrowhead—end of task.

Using the Bézier and Pen Tools

The *Bézier tool* and the *Pen tool* are variations on the same theme of drawing connected curves and straight segments through the action of first clicking to set a path point and then either dragging to define a curve behind the click point or clicking (no dragging) to define a straight path segment behind the click point. You'll find these tools grouped together with other line-drawing tools.

One of the less obvious differences between the two tools is that the Pen tool offers a "look-ahead" point when you draw with it: before you click or click-drag a point, the proposed path between the point before you click and the previous (already defined) point on the path is shown in light blue. Although control handles (those guys sprouting off the nodes, discussed later in this chapter) are displayed when a curve is defined with the Pen tool, the Pen tool doesn't afford you as much control in steering the shape of the curve as the Bézier tool. Unlike the Pen tool, the Bézier tool always uses a click-drag mouse gesture to produce curves. The Pen tool, on the other hand, lets you hover your cursor before clicking to set the preceding curve in an object's path segments. When you're just beginning with CorelDRAW, the Pen tool is useful because it provides a preview of the next segment you'll create. However, after you gain some experience, you might want to skip the previews, pick up some drawing speed, and use the Bézier tool.

Pen tool
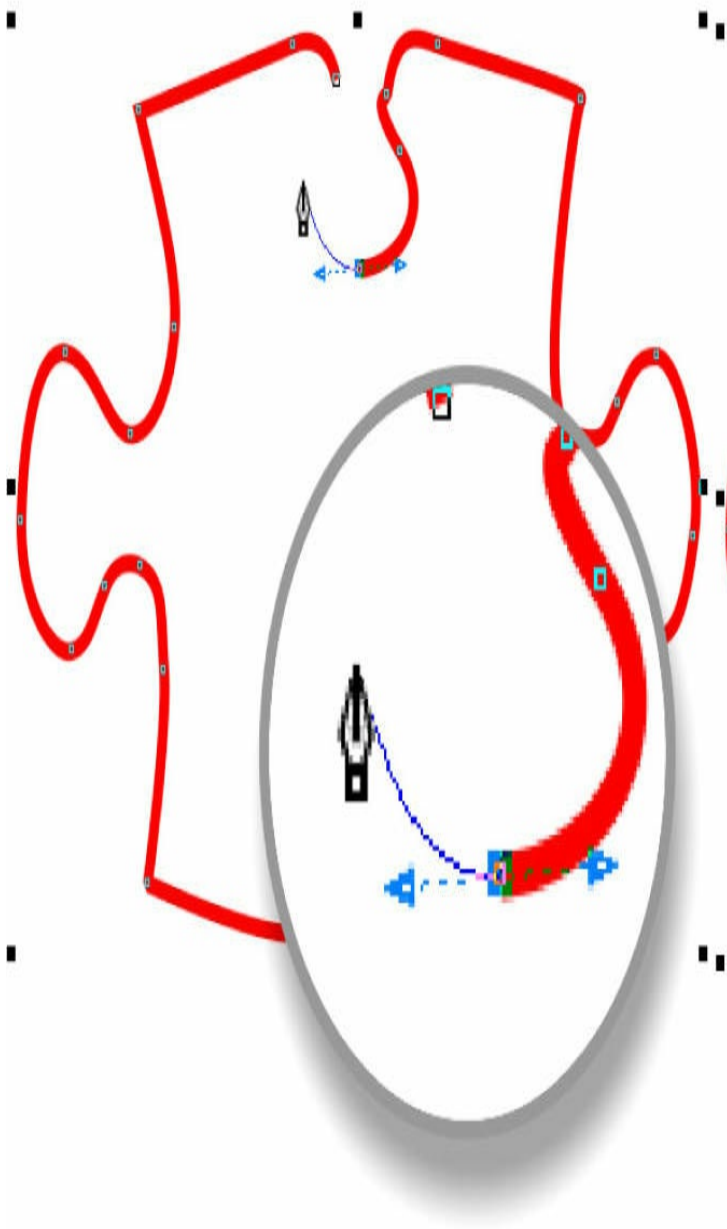
Bézier tool

Hover the cursor between the previous click and the next click to see a "look ahead" of the path you're drawing.
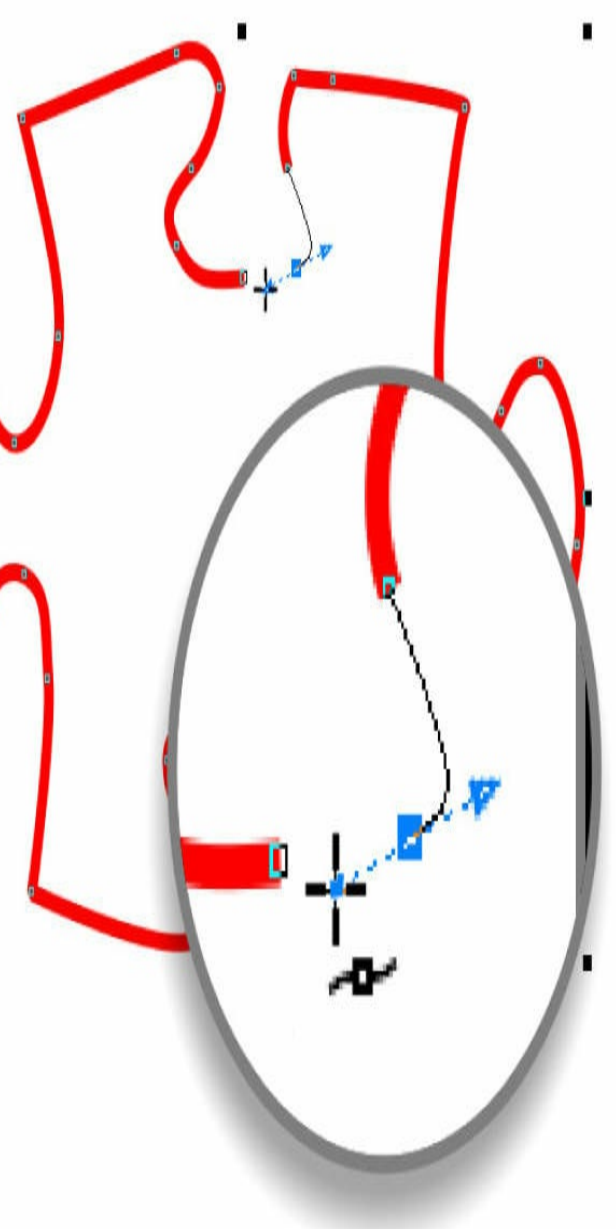
Drags control the handle from the node created when click-dragging.

Getting a Handle on Béziers

The product of both the Bézier tool and the Pen tool can be curves between two nodes whose connection to a neighboring node is smooth and symmetrical. Control handles are

revealed on smooth, symmetrical nodes when you click one using the Shape tool. These handles are used for intuitively reshaping the curve.

Because straight line segments and curve segments share so much in their fundamental anatomy, there is almost no distinction between the terms *line* and *curve* in the discussions in this chapter. The shapes of Bézier lines are controlled in part by node properties and the position of curve handles. Two paths can have nodes in the same relative page position but have completely different shapes, as shown here.
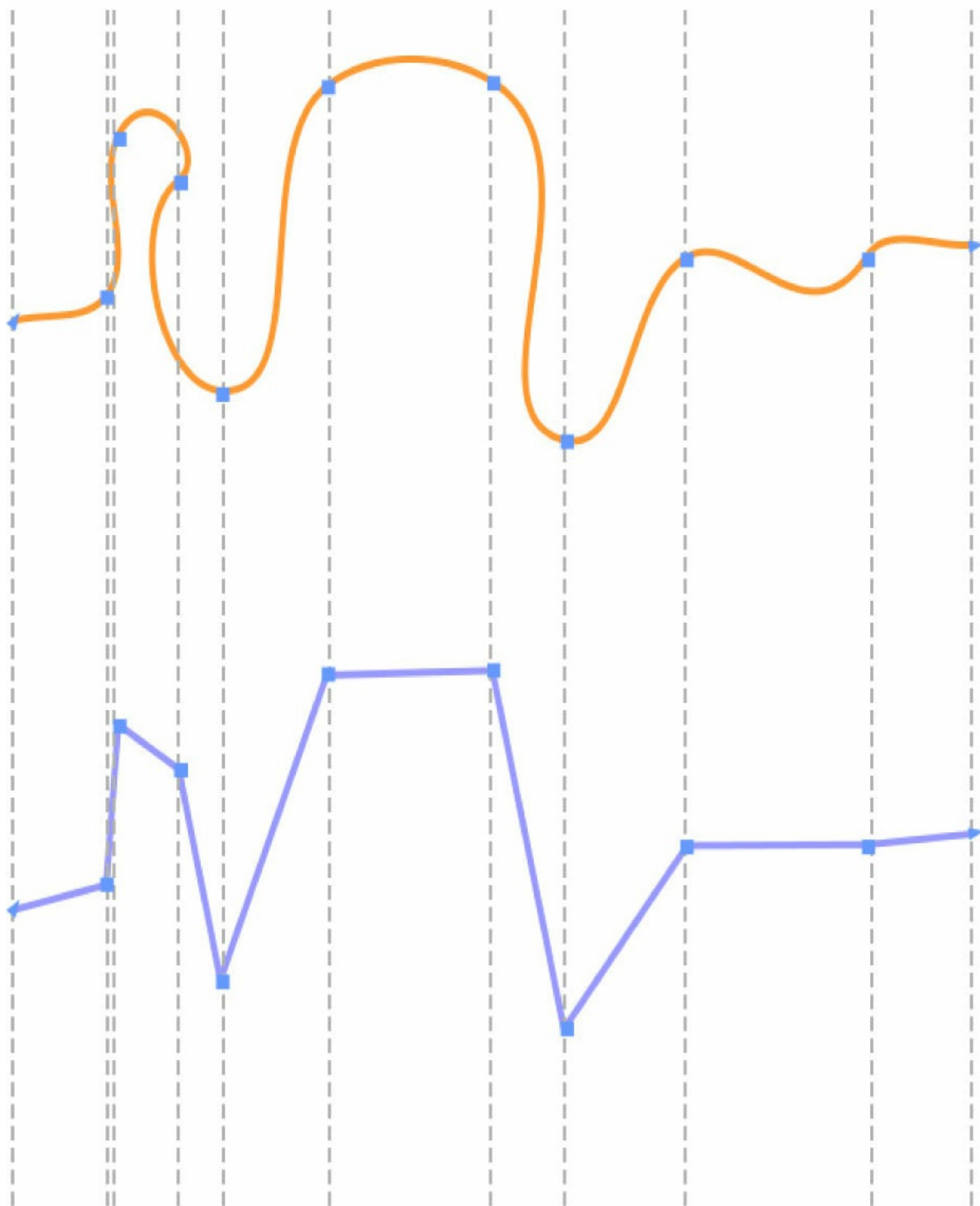
Same node positions

Nodes and Control Points

When a vector path describes an arc, *nodes* (points) connect the beginning and end points, and the nodes have *control handles* at the end of which are *control points* the screen element you use to manipulate curves. The number of control handles and points depends on the segment connected by each node. For example, an arc (a curve) connected to a straight line segment has one control handle visible, and it controls the slope of the curve segment. When two curve segments are connected, you'll see two control handles if you click the connecting node with the Shape tool, and this node can have different connection properties (such as Cusp and Smooth—described later in this chapter). A straight path segment can be described as two nodes connecting the segment, and the control handles for the nodes coincide in position with the node itself. For all intents and purposes, the control handles can't be seen; they become visible when the segment is changed to a curved segment: the control handles appear on the segment, and you can move them away from the launch point of the curve and then freely manipulate the slope of the curve by dragging the control points.

Nodes can be defined as *cusp, smooth*, or *symmetrical* by using the Shape tool in combination with the options on the Property Bar, as shown in the following illustration. *Cusp* nodes can be used to create a discontinuity in direction between two line segments; in English, the two segments connect in a "non-smooth" fashion. Think of the moon being on the cusp; it's crescent shaped, and this is the sort of shape you can create using cusp node connections. *Smooth* nodes cause the path slope and direction to align on either side of a node; their relationship is in 180° opposition, which has the effect of creating a smooth transition at the node point itself. Control handles surrounding a smooth node may be unequal distances from the node. *Symmetrical* nodes not only are smooth, but the control handles are of equal distance from the node. You'll immediately appreciate the effect of a symmetrical node; when you drag one control point away from a node, the opposing control handle moves an equal distance from the node in exactly the opposite direction. The artistic effect is that the two joined path segments take on an almost circular appearance, which is very useful for technical illustration work.

Cusp node
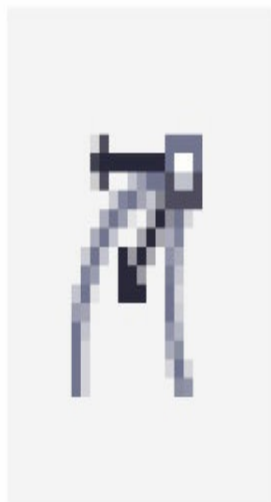
Smooth node
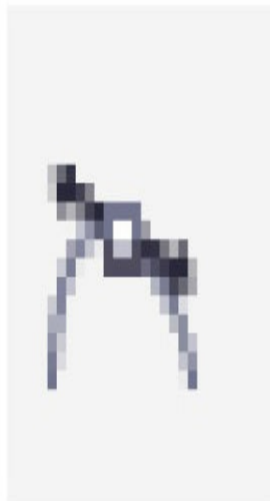
Symmetrical node

Cusp node

Control handles

Symmetrical node

Control point

Smooth node

Tip   When drawing with the Bézier tool, hold CTRL as you click to force new node positions to align vertically, horizontally, or within constrained angles relative to the last created node position. Holding CTRL while dragging curve handles constrains their angles to 15° increments relative to the last node created.
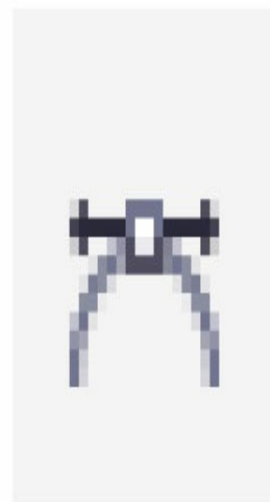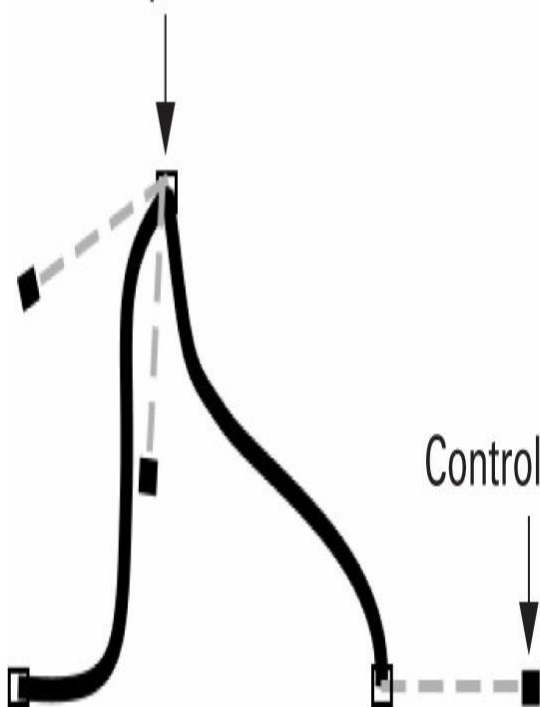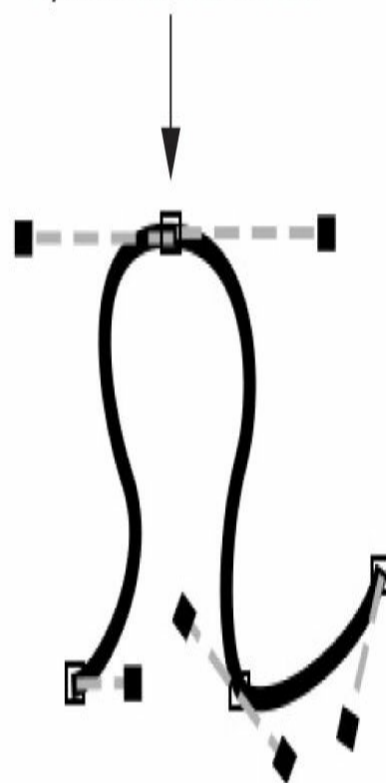
We try out a new drawing method in the following tutorial.

Drawing Curves and Straight Line Segments

Tutorial

1. Choose either the Bézier tool or the Pen tool and use a single-click action to define the first node position of your path. Click again to define a second point somewhere else on your page. The two nodes are now joined by a straight line.
2. Using the click-drag mouse technique, click to define your next node position, but continue dragging in any direction. As you drag, the second and third nodes are joined by a curved line.
3. If you chose the Bézier tool, you'll notice that two control handles appear joined by a dotted line. The point you are dragging is the control point that steers the control handle. The farther you drag the control point from the node, the larger the arc of the curve becomes. Release the mouse button and notice that the control handles remain in view; your path is complete unless you'd like to move a node or refine the position of its control points some more.
4. If you chose the Pen tool, you'll notice that a preview of your next curve appears as you move your cursor, which remains active until the next node is defined. To specify a node as the last in the path, use a double-click action to define the current node as the last point.
5. Using either tool, click your cursor directly on the first node you defined. This action closes the path and automatically joins the first and last nodes.
6. You can now fill the object; regardless of the settings in CorelDRAW's General options, the curves are filled. Export after 10–12 minutes at 450°. Allow to cool. Serves one to four. I'm just kidding here, of course—but not about the closed paths.

Editing Bézier Paths

All lines are controlled by properties of the nodes they include, which are edited using the Shape tool (F10). You'll find this tool, shown here, grouped with the Knife, Eraser, and Freehand Transform tools.

Using the *Shape tool*, you can change node positions and curve shapes by click-dragging the nodes, their control points, and by directly click-dragging on a path segment. While you're using the Shape tool, icons appear on the Property Bar when one or more nodes are selected; you can select several nodes to change by marquee-dragging them or by SHIFT-clicking a few. These icons are used to set node attributes to Cusp, Smooth, and Symmetrical, to join nodes and break nodes to create individual path segments, and to create straight lines from curves (and vice versa) when you've selected a segment or a node connecting segments. There are additional options, and the bevy of functions on the Property Bar provides exceptional control and flexibility in your design work. In short, you should *get to know the functions* for the Shape tool. The options are called out in Figure 7-5.

Shape tool
Selection mode

Delete
selected
node(s)

Join
two
nodes

To line

To cusp

To symmetrical

Rectangular

Add node

Break curve

To smooth

To curve

Reflect nodes
horizontally

Reflect nodes
vertically

Extract subpath   Close curve   Align nodes

Reduce Nodes   0

Reverse
direction

Extend curve
to close

Stretch and
scale nodes

Rotate or
skew nodes

Elastic mode

Select all
nodes

Reduce nodes
(smoothing)

FIGURE 7-5 **The Property Bar offers comprehensive control over path and node properties.**
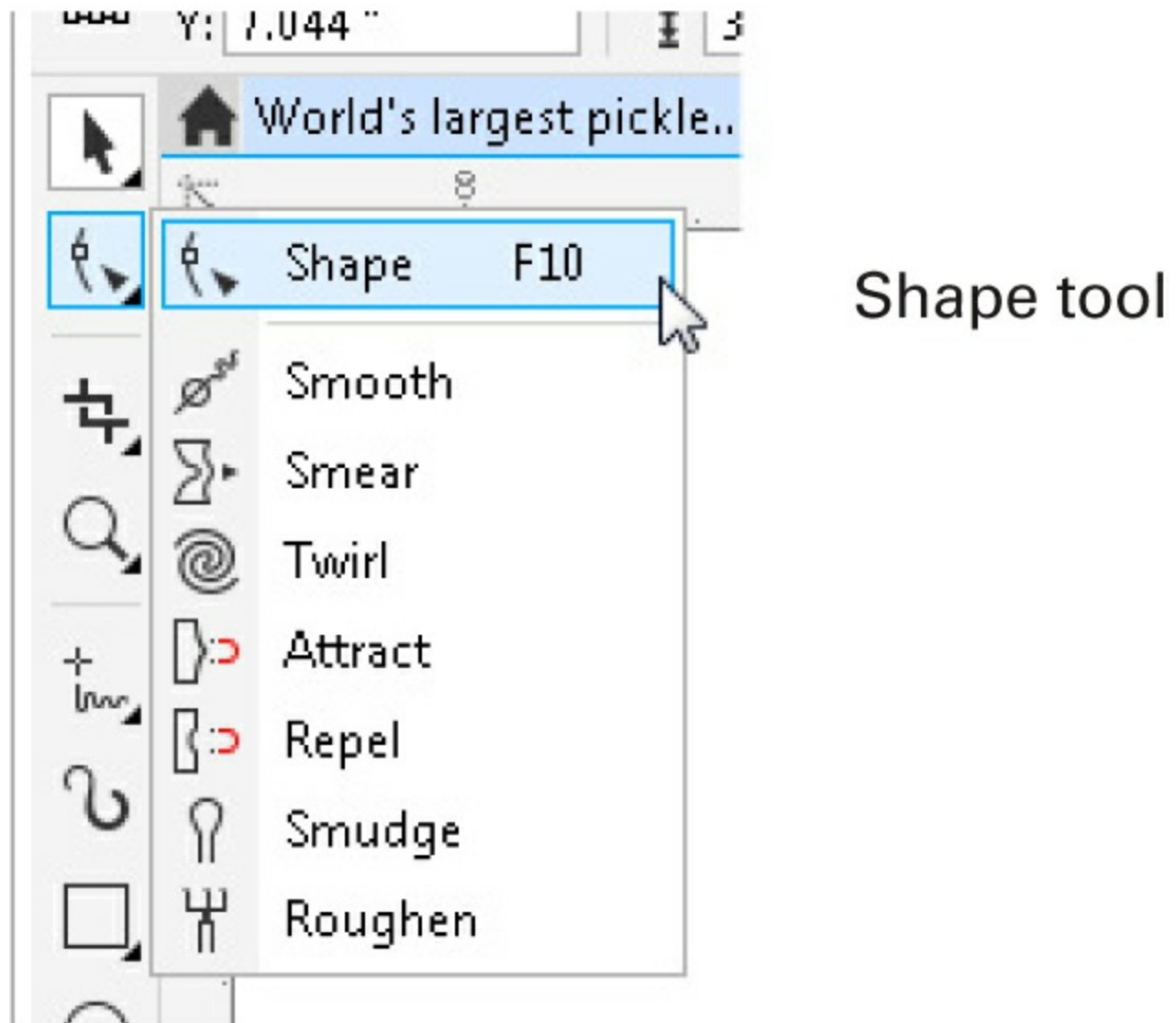
Obviously, being able to alter the connections between line segments is an important aspect of creating sophisticated artwork! Each of these buttons changes the selected nodes, lines, and curves in specific ways. The following is a description of what the icons do and what they're called.

- **Shape tool, Selection mode**   You can marquee-select nodes the way users always have, by click-dragging a rectangular shape around the nodes you want to select, or you can use freehand style, which produces a lasso-like marquee you can use to be very careful and exacting about which nodes in a group you want to edit. In freehand style, you might also want to use SHIFT to add to the selected nodes.
- **Add/Delete Nodes**   These buttons give you the power to add new nodes to a curve or

delete selected nodes after you've drawn a path, using the Shape tool and clicking at specific points on a path. To add a node, click any point on a line to highlight the new position and then click the Add Node button. You can also add a new node to a line by clicking on one or more nodes and then clicking the Add Node button to add a node midpoint between the selected node and the next node on the path. To delete a node, click to select it with the Shape tool and then click the Delete Node button. You can also marquee-select (drag diagonally with the Shape tool to create a rectangle surrounding the nodes) and then delete all the selected nodes in one fell swoop. Pressing the minus (–) key on your numeric keypad or the DELETE key also deletes the selected nodes.

Tip Pressing the plus (+) key on your numeric keypad with the Shape tool touching a path segment might be a quicker way to add a node. You can also double-click anywhere on a path segment to add a node.

- **Join Nodes/Break Curve** When two unconnected nodes on an open path are selected (for example, when the start point is close to the end point), clicking the Join Nodes button connects them to create an unbroken path. On single paths, only the unjoined beginning and ending nodes may be joined. On compound paths (paths that aren't necessarily close to one another, but have been joined using the Object | Combine command; CTRL-L is a shortcut worth memorizing), the beginning and ending nodes selected on two existing—but separate—paths can also be joined. While a single node is selected or while a specific point on a segment is clicked, clicking the Break Curve button results in two nodes becoming unjoined, breaking a closed path into an open path.

Tip Unjoined paths are *not* the same as separate objects. Two paths, for example, can be located *nowhere near* each other on a page and yet still be part of a single path. If you want to break a path into its component subpaths, you first select the nodes using a marquee-selection technique with the Shape tool, click the Break Curve button, and then choose Object | Break Curve Apart. CTRL-K is the shortcut, and it's another shortcut you'll want to commit to memory.

- **Line to Curve/Curve to Line** These two buttons are used to toggle the state of a

selected straight line to a curve state, and vice versa. A single-click with the Shape tool selects a line or curve, indicated by a round black marker on the line. When curves are converted to lines, the path they follow takes on a shortcut: "the shortest distance between two points." When you convert a straight line to a curve, the path remains the same shape, but control handles appear directly on the "line." The quickest way to get the control points visible is to drag on the line to force it into a curve shape.

- **Extend Curve to Close**   For this command to be available, you must have both the beginning and ending nodes of an open path selected (marquee-select the points or SHIFT-click to select them both). Under these conditions, clicking the Extend Curve to Close button joins the two nodes by adding a straight line between them, thus closing the path.

- **Auto-Close Curve**   While an open path is selected, clicking this button joins the beginning and end nodes to form a closed path by adding a new straight line between the two nodes; it's a similar command to Extend Curve to Close, but depending on the closeness of the start path node to the end path node, you might not even see a visible straight line connection. You can also join the end points of a selected curve using the Close Curve option in the Object Properties docker's Curve tab. Press ALT-ENTER to open the Object Properties docker. The start and end nodes don't even have to be selected to use the Object Properties method.

- **Reverse Curve Direction**   While a curve path on a line is selected, clicking this button has the effect of changing the direction of the path. By doing this, the start point of the path becomes the end point (and vice versa). The results of using this command button are most noticeable when the start or end of the line or path has been applied with an arrowhead, meaning the arrowhead is applied to the opposite end of the line or path. You may also notice subtle changes in the appearance of line styles applied to a path after using this command button.

- **Extract Subpath**   This option becomes available only when a compound path is selected. After you click the Extract Subpath button, the selected path is separated from the compound path, converting it to a separate path. Using this command on a compound path composed of only two different paths is essentially the same as using the Break Apart command. It's more useful when you need to extract a specific path from a compound path made up of three or more paths.

- **Stretch and Scale Nodes**   This is a very powerful CorelDRAW feature not available in competing applications. When at least two nodes on a path are selected, clicking the Stretch and Scale Nodes button allows for the transformation between nodes using their relative distance from each other vertically, horizontally, or from the center. Eight selection handles become available, just like object selection using the Pick tool, and you can use a click-drag action from any corner or side selection handle toward or away from the center of the node selection. Holding SHIFT constrains the stretch or scale operation from the center of the selection. As an example, if you draw a cartoon portrait of a man in profile, you could select the nose nodes and enlarge the fellow's

nose without significantly affecting any other curve segments in the drawing.

- **Rotate and Skew Nodes**   Similar to Stretch and Scale Nodes, when at least two nodes on a path are selected, clicking the Rotate and Skew Nodes button lets you rotate and skew the selected nodes; this is a great feature for refining a shape just a little, and also for creating more dramatic appearance changes (see the following illustration). Eight selection handles become available, enabling you to use a click-drag action from any corner selection handle to rotate the nodes in a circular direction, either clockwise or counterclockwise. Dragging from any side handle lets you skew the node selection either vertically or horizontally.
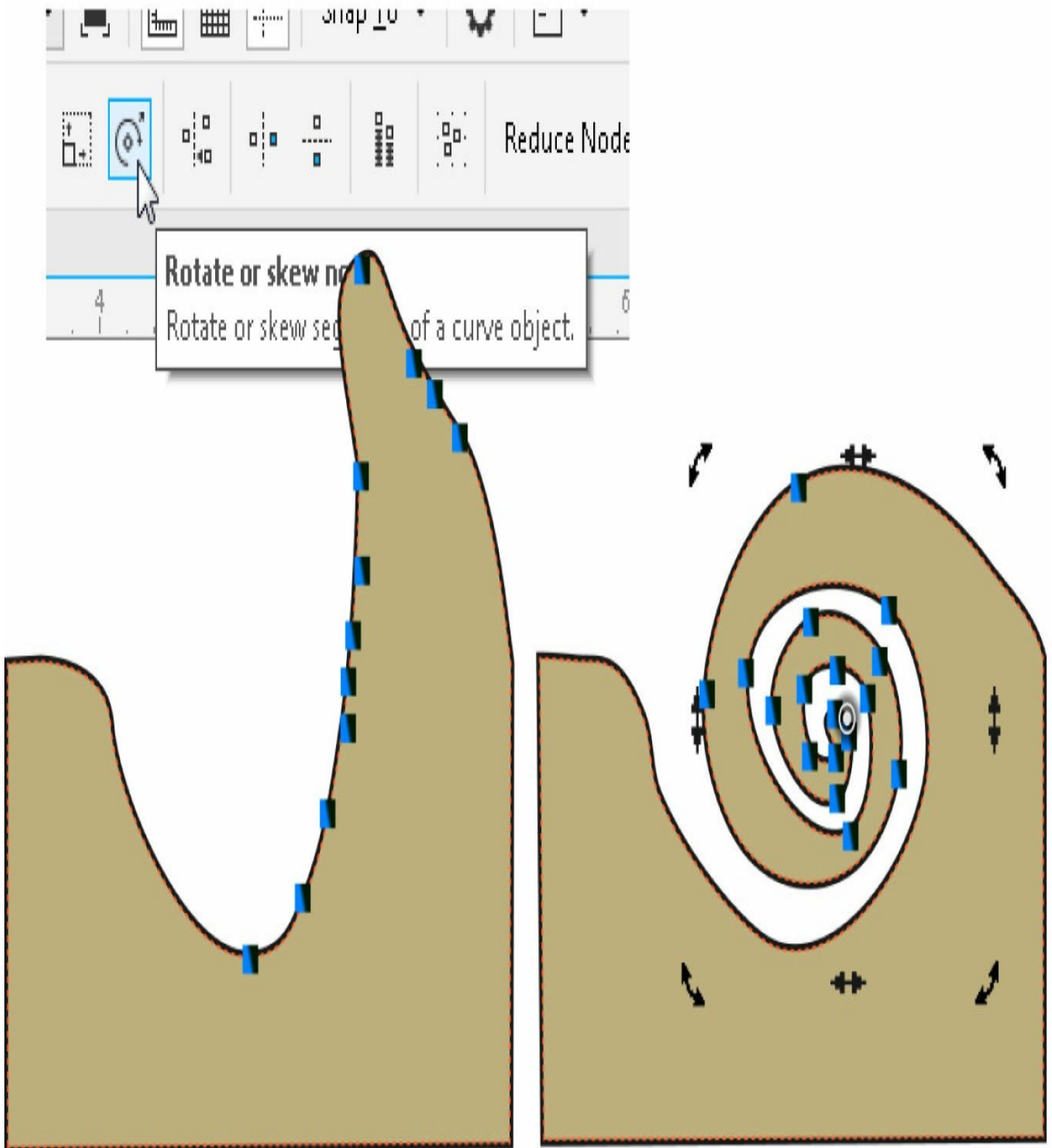
- **Align Nodes**   When two or more nodes are selected, clicking this button opens the Align Nodes dialog, from where you choose either the Align Vertical or Align Horizontal option to automatically align your node selection accordingly. In addition to these options, while only the beginning and ending nodes of an open path are selected, you can also choose to align control points. This has the effect of moving the two end

points of the line to overlap each other precisely. This is a wonderful command for quickly sketching a zigzag (perhaps for an illustration of a saw blade), and then in one step aligning the nodes to create a precise illustration.

- **Reflect Nodes Horizontally/Vertically** These two buttons become available when two or more nodes are selected. You use these options to move nodes using the nudge keys (the UP, DOWN, LEFT, and RIGHT ARROW keys on your keyboard) or click-drag actions in opposite directions.

- **Elastic Mode** With this command, you move selected nodes according to their relative distance from each other; the effect is like experimenting with a rubber band. For example, while a collection of nodes is selected, dragging one of the nodes causes the others to be dragged a shorter distance in relation to the node that is being dragged. While Elastic mode is off, all the selected nodes are moved by an equal distance. Try this option to add a more organic and natural feeling to a drawing you might feel looks a little too studied and stiff; it adds expression to a path.

- **Reduce Nodes** When you use this command, CorelDRAW evaluates the overall shape based on the nodes you've selected, deletes nodes that deviate from a predictable course along the path, and then repositions the remaining nodes—the effect is to smooth the curve. To use this feature, select the nodes controlling the segments you want to smooth and drag the Reduce Nodes slider control position toward 100. As you drag the slider, the shape of the curves becomes smoothed and you'll notice that superfluous nodes disappear from the curve. This option is useful for smoothing lines drawn using the Freehand tool with either the mouse or a digitizing tablet stylus.

- **Select All Nodes** This button selects all the nodes on a path (or compound path) using one click. It's a great feature for users who aren't experts with the marquee-selection dragging technique yet. You may also select all the nodes in a path with the Shape tool by holding CTRL-SHIFT and clicking any node on the path.

Are you ready to test-drive the Shape tool? Follow along in the upcoming tutorial.

Editing Paths with the Shape Tool

Tutorial

1. Choose the Ellipse tool (F7) and create an ellipse of any size. Convert the ellipse shape to curves (CTRL-Q) to create a closed path with four nodes joined by four curved lines.
2. Choose the Shape tool (F10). Notice that the Property Bar now features all the line and node command buttons. Click the Select All Nodes button to select all nodes on the path.
3. With the nodes still selected, click the Add Node button (or press the + button on your

numeric keypad). Notice that four new nodes are added midpoint between the four original nodes.

4. Click any of the segments once and click the Convert Curve to Line button. The curve is now a straight line, and the curve handles have disappeared.

5. Click a node on one of the other existing curves, drag either of the curve handles in any direction, and notice how they change the shape of the path.

6. Using a click-drag action, click near the middle of the curve segment and drag in any direction. As you drag, the curve handle positions at either end both move, and the shape of the curve is changed accordingly.

7. Click the Make Node a Cusp button and then perform the same action. Notice that the lines on either side of the node can be curved in any direction independently of each other. Now click any node on the path to select it and then click the Make Node Smooth button. Drag the curve handle of this node in any direction. Notice that the curve handle can be dragged only in a single direction. With this node still selected, click the Break Curve button to split the path at this point. Although it may not be obvious, two nodes now exist where the original node used to be. Drag either of these nodes in any direction to separate their positions. The nodes are now control points because they break the path to form beginning and end points.

8. Select one of these nodes, hold SHIFT while clicking the other, and click the Extend Curve to Close button. Notice the curve is now closed again, while the two nodes have been joined by a straight line.

9. Undo your last action (CTRL-Z) to unjoin the nodes and, while they remain selected, click the Align Nodes button to open the Align Nodes dialog. If the nodes aren't already selected, click to select all three options (Align Horizontal, Vertical, and Control Points) in the dialog and click OK to align the points. Notice that they are positioned to overlap precisely. Click the Join Two Nodes button in the Property Bar. Your path is now closed, and the nodes are joined.

0. Hold SHIFT and click to select two or more nodes on your path. With your nodes selected, click the Stretch and Scale Nodes button and notice that eight selection handles appear around your node selection. Hold the SHIFT key (to constrain from the center) and drag one of the corner handles toward or away from the center of the selection. All node positions are scaled relative to each other's position, and the lines joining the unselected nodes also change shape.

1. With the nodes still selected, click the Rotate and Skew Nodes button in the Property Bar. Notice that eight rotate and skew handles appear around your selection. Drag any of the corner rotation handles either clockwise or counterclockwise to rotate the nodes. Notice that they are rotated relative to their current position and that the lines joining the unselected nodes also change shape.

The preceding tutorial is only a sampling of what can be accomplished when editing

nodes using the Shape tool. You'll want to invest some quality time practicing your editing skills using all the available node-shaping command buttons, because the payoff is better artwork—artwork that's closer to what you have in your head. Also, in the long run, you'll save time creating wonderful pieces.

Tip   To set the drawing behavior of the Freehand tool and/or Bézier tool, double-click either of the tool buttons in the Toolbox to open the Options dialog for the Toolbox group. Then you can click on the Freehand/Bézier tool title to open its page in the right pane. Options are discussed in the next section.

Copying and Pasting Subpaths

New to CorelDRAW X8 is the ability to use the Shape tool to select a subpath of a more complex object. This new feature will come in very handy when you need to copy only part of a drawing, but the part you want is joined to a larger path.

   Take a moment to open Swiss Cheese.cdr and get some serious hands-on entertaining experience in the digital dairy business. On the *hole* (sorry!), this tutorial will be fun and educational.

Increasing the Number of Holes in Swiss Cheese

Tutorial

1. Zoom into the two holes on the facing side of the drawing in Swiss Cheese.cdr and then choose the Shape tool from the Toolbox.
2. Marquee-select all eight of the nodes on both subpaths, as shown in Figure 7-6. Then use the Windows standard shortcuts CTRL-c to copy and then CTRL-v to paste.

1

2
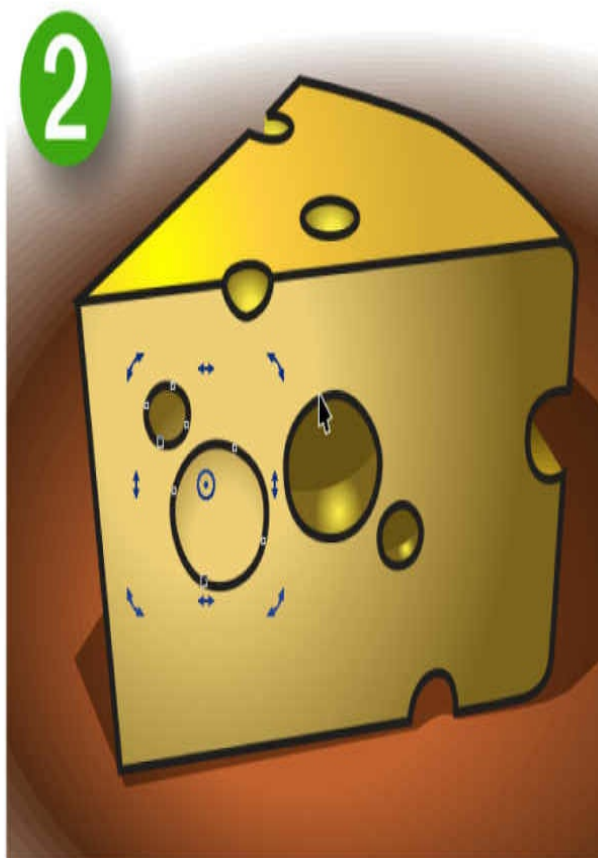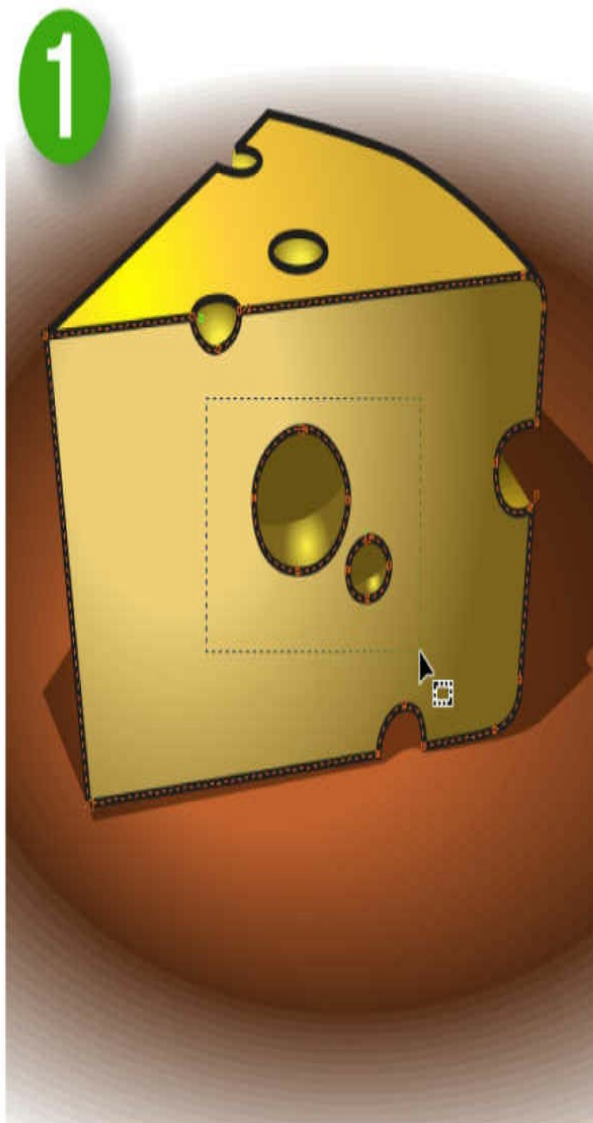
Press CTRL-C and then CTRL-V. With the Pick tool, move the copy, click the selection, and then rotate the holes.

Marquee-select both holes with the Shape tool.

Properties ▸ Transformation

Properties
Choose which ob

Properties

☐ Outline

☑ Fill

☐ Text

Choose the Attributes Eyedropper, set it to only sample Fill, and then sample the large original hole. Then fill the new holes.
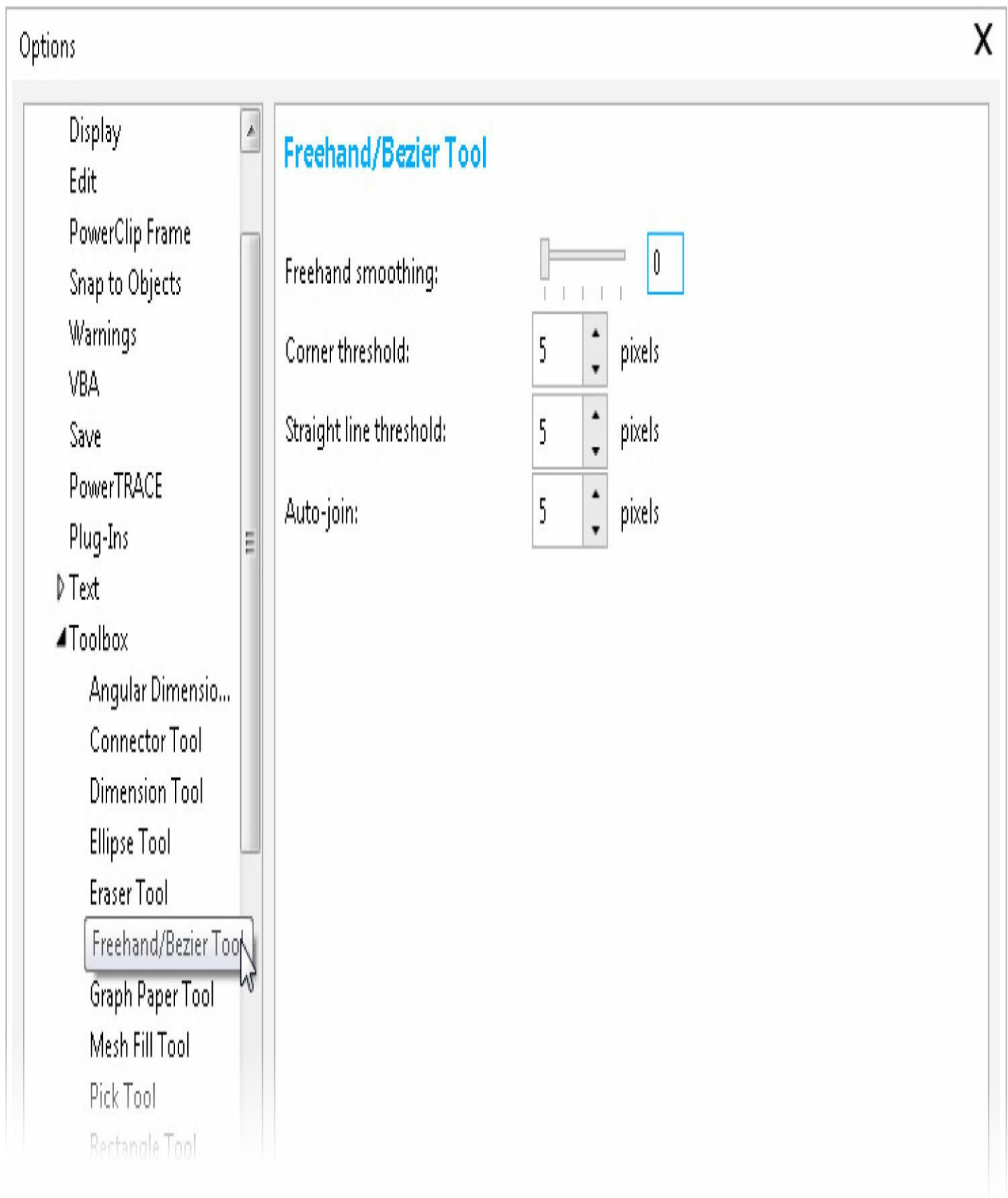
3

3. The copies of the paths do not belong to the front subpath of the cheese. Choose the Pick tool from the Toolbox, and then move the compound path (that you freed from the cheese subpath) to the left, and with the object selected, click the object to put it into Skew/Rotate mode. Then rotate the piece as shown in Figure 7-6 so the new holes don't look as though you just cloned over an area in the drawing.

4. Choose the Attributes Eyedropper from the Toolbox—and, yes, we're getting a little ahead of ourselves in exploring CorelDRAW (it's covered in detail in Chapter 12). However, this is a guided tour, and your guide promises not to tax your patience or skills for more than two minutes, so why not continue?

5. On the Property Toolbar, click the Properties drop-down list, leave only Fill checked, and then click OK to confirm your setting.

6. Click the Attributes Eyedropper on the bottom of the hole, where it looks like a circular gradient in Figure 7-6. Now you're ready to apply the attributes to the new holes. Your cursor is now a paint bucket; click over either of the circles and, except for perhaps a little modification of the circular gradient using the Interactive Fill tool, you now have a darned nice wedge of cheese, with fewer calories because there are more holes now. You should get out the crackers and the red wine you have in the kitchen.

Controlling Freehand and Bézier Tool Behavior

The settings to control how the Freehand and Bézier tools create the curves and lines you draw are set using a series of options in the Freehand/Bézier Tool pane of the Options dialog, shown next. To access these options, click the Options button on the Standard Bar, expand the tree subdirectory under Toolbox, choose the Freehand/Bézier Tool entry, and you're there. The *quick* way to get to this box, however, is to double-click the Freehand or Bézier tool button after choosing it from the Curve Tools group.

Options

X

Display
Edit
PowerClip Frame
Snap to Objects
Warnings
VBA
Save
PowerTRACE
Plug-Ins
▷ Text
◢ Toolbox
   Angular Dimensio...
   Connector Tool
   Dimension Tool
   Ellipse Tool
   Eraser Tool
   Freehand/Bezier Tool
   Graph Paper Tool
   Mesh Fill Tool
   Pick Tool
   Rectangle Tool

Freehand/Bezier Tool

Freehand smoothing: 0

Corner threshold: 5   pixels

Straight line threshold: 5   pixels

Auto-join: 5   pixels

Here's how the options work:

- **Freehand Smoothing**   The Freehand Smoothing option enables you to set the default value of the Freehand Smoothing option in the Property Bar while drawing with the Freehand tool. Smoothing may be set based on percentage within a range between 0 (minimum smoothing) and 100 (maximum smoothing).
- **Corner Threshold**   This option is for setting the default value for corner nodes when you're drawing with the Freehand or Bézier tool. Lower values cause nodes to be more likely set to cusp nodes, and higher values cause them to more likely be smooth nodes. The range may be set between 1 and 10; the default is 5.
- **Straight Line Threshold**   This option pertains to how the shapes of lines or curves are created when you're drawing with the Freehand tool. Lower values cause nodes to be more likely set to straight lines, whereas higher values cause them to be curved more frequently. The range may be set between 1 and 10; the default is 5.
- **Auto-Join**   This option sets the behavior of the Freehand or Bézier tool while you're drawing closed-path objects. This value represents the distance in pixels your cursor must be when you click *near* the first node of a newly created path to close the path automatically. Auto-Join can be set anywhere within a range between 1 and 10 pixels; the default is 5, which is probably the best overall choice for the large screen resolutions we all run today.

Working with Compound Paths

Compound paths have at least two separate paths (either open or closed) composing a single shape. To examine an example of a compound path, use these steps:

1. Choose the Text tool (F8), click once to define a text-insertion point, and then type an uppercase *Q* character. You can assign the character any typeface you like; the more ornamental the character, the more obvious the compound path soon will be. The character shape shown in the illustration has two paths that are combined: one represents the "positive" space and one represents the "negative" space shape.
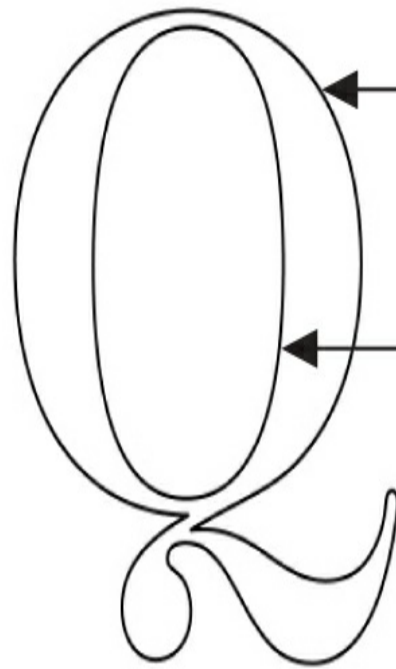
Outer path creates positive space.

Inner path creates negative space.

Original

2. While the text object is selected, convert it to curves (CTRL-Q). The Status Bar now indicates the object is a curve on Layer 1.

3. Change your view to Wireframe; choose View | Wireframe.

4. Press CTRL-K (Object | Break Curve Apart). With the Pick tool, click on one of the shapes and drag it to move it; clearly the two paths are now separate. You have just converted a compound path featuring two subpaths into two individual objects, as shown here.

Two separate paths
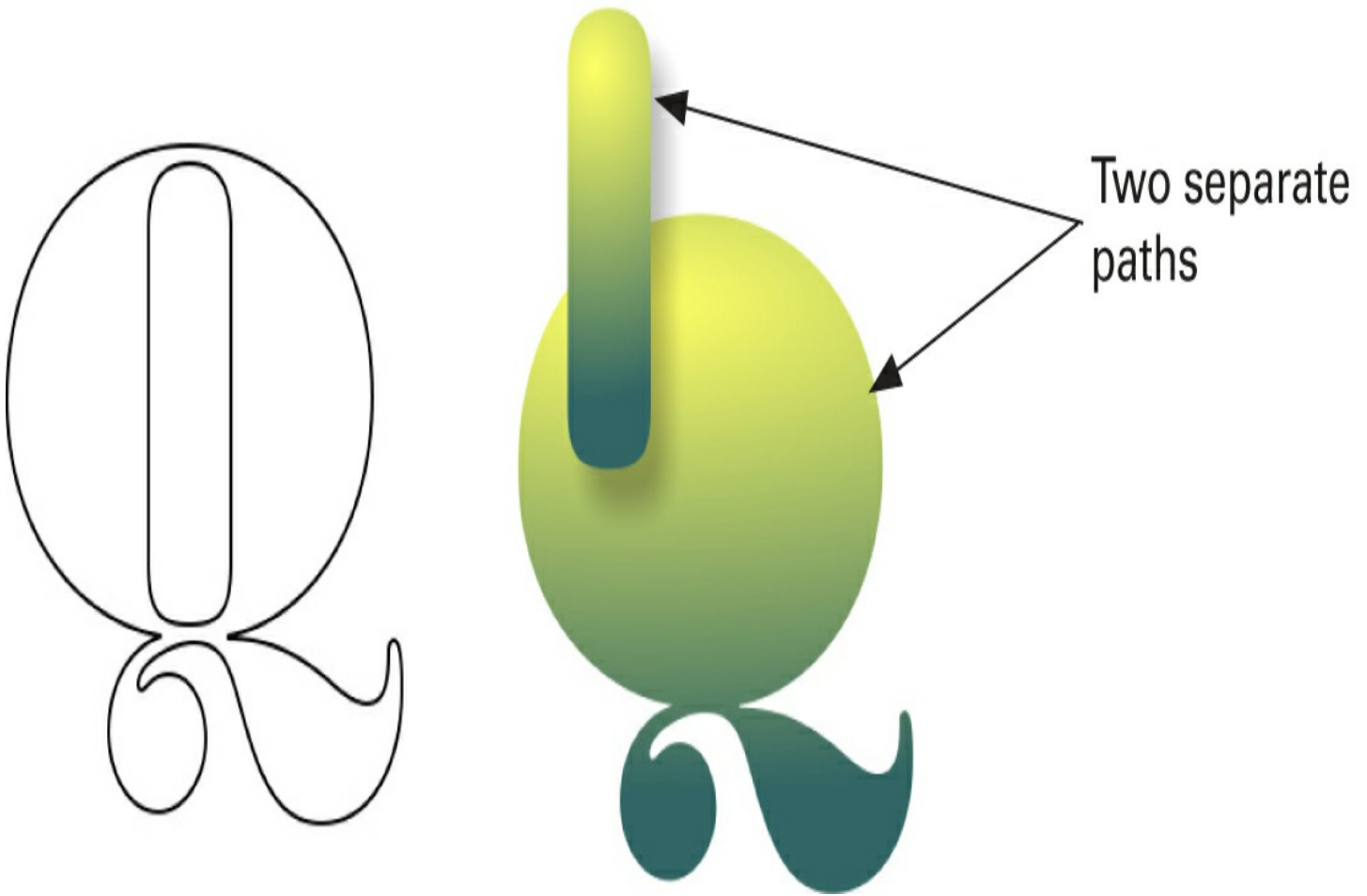
Combining Objects

When separate objects are combined, they behave as a single object. While two or more closed paths are combined, they form positive and negative spaces within the object. Applying a fill to this type of object causes the positive shapes to be filled, and the negative shapes remain clear, as shown next. The Combine command does this: choose Arrange | Combine, or use the CTRL-L shortcut. You can also click the Combine button in the Property Bar, or choose Combine from the pop-up menu.

Original objects   Combined objects

Combining objects that normally feature unique properties—such as rectangles, ellipses, polygons, and perfect shapes—permanently converts them to curves.

Breaking Paths Apart

You can separate the individual paths in a compound path using the Break Curve Apart command (CTRL-K). This command is available when a compound path composed of at least two subpaths is selected. (Using the Extract Subpath command button in the Property Bar also does this, but only for the *selected* path.)

Converting Objects to Curves

Converting special types of objects to curves—such shapes auto-created with the Rectangle and Ellipse tools—frees them to be manipulated with the Shape tool as if they were ordinary paths. Choose Object | Convert To Curves, press CTRL-Q, click the Convert To Curves button in the Property Bar, or right-click the object and choose Convert To Curves from the pop-up menu.

Converting an object to curves removes any special editing properties; for example, text loses its editing property as text, and rounded rectangles can no longer be edited to refine the curvature of the rounded corners. Convert To Curves applies to Polygon, Ellipse, and Artistic Text objects as well as certain effects objects such as envelopes and perspective

effects.

You saw in this chapter that there are different tools for creating paths, but the results are more or less always the same; objects have path segments and nodes, and paths can be open or closed. You also learned how to edit paths using the Shape tool. You'd be well served to bookmark this chapter; there's an awful lot of power in CorelDRAW's drawing and editing tools, and this chapter can be a good reference in the future. After all, the program isn't called CorelFILL or CorelRECTANGLE—*drawing* is what good artwork and vector design is all about.

8 Exploring Special Shapes, Connectors, and Other Office Automation Helpers

Not everyone is a born artist. But try telling this to your boss, who has elevated you from the company's nominally talented artist to the resident Art Director. You've shown a little design flair, helped out stapling a flyer or two, and, right or wrong, your boss's presumption now is that you're a digital da Vinci.

This chapter is the Corel version of a Non-Artists' Rescue Kit. As you unpack and read through this chapter, you will gain experience with the features most sought by your business—tables, clean and crisp dimensioning callouts for tech work, banners, and perfect polygons—even though you think that *vector* is the kid's name down in the mailroom.

Seriously, CorelDRAW is so all-encompassing as a creative suite that it includes something for just about every need. And this chapter is "all business"—with a healthy serving of fun, as you've come to expect from these *Official Guides*.

CorelDRAW's Smart Drawing Tool

Even if you use a graphics tablet and stylus, you're still drawing freehand, and using a mouse introduces still more flubs when it comes to freehand drawing. Fortunately, the Smart Drawing tool takes the guesswork out of drawing polygonal and rounded objects—in a nutshell, you click-drag *an approximation* of what you intend, tune the options for the Smart Drawing tool based on your first drawing, and in a jiffy you have a precise object with the proportions you need. Pictured next on the Toolbox, the Smart Drawing tool instantly translates rough drawings into shapes you'd usually consider drawing with the Rectangle tool or Ellipse tool—or with other tools that require more effort and skill.

When the Smart Drawing tool is selected, the Property Bar displays Shape Recognition Level and Smart Smoothing Level options (shown next) for setting the sensitivity CorelDRAW uses to translate your roughs into precise shapes.