

16 The Perspective and Extrude Effects

For centuries, traditional artists have studied and sweated (and sometimes failed) to create artwork that conveys a sense of dimension. Perspective, vanishing point, and angle of view can easily elude all but the most diligent, talented people because the sense of a third dimension on a 2D canvas is, after all, an illusion.

Fortunately, you don't have to go to school for years and you don't have to break a sweat when you want a little photorealism and dimension the next time you sit down to draw because you have CorelDRAW. In this chapter, you'll learn how to lift your graphical ideas right off the page with version X8's perspective effect and DRAW's legendary Extrude tool.

If you want your audience to be drawn *into* your work and not simply to stare at it, fire up CorelDRAW and read on!



Note Download and extract all the files from the Chapter16.zip archive to follow the tutorials in this chapter.

The Perspective Effect: What Perspective Does to an Object

We've all seen examples of *perspective*; for example, after you make sure a train isn't coming, you stand on the tracks and look toward the horizon. Seemingly, the train tracks converge at the horizon. Naturally, the tracks don't *actually* converge, or it would be difficult to put a train on them. This optical illusion demonstrates the very real optics of the human eye. Any object that has parallel sides (such as a milk carton and most tables) when viewed at an angle other than face-forward will look as though its parallel sides converge at a point somewhere in the distance. This point, whether you can see it on train tracks or imagine it by mentally extending the parallel lines, is called the *vanishing point*, and

CorelDRAW's perspective effect offers an onscreen marker for moving a shape's vanishing point when Effects | Add Perspective has been applied to an object or group of objects.

Depending on the angle at which you view an object—to use a cube as an example—you can see one, two, or three sides of the cube. When you draw a cube, face front, in CorelDRAW, you've drawn a square; there is no perspective, and it's not very interesting. If you can see two faces of the cube, you're viewing from a perspective point; the object is said to have *one-point perspective*. Naturally, you can't see more than three sides of a cube at one time, but when you do see all three front-facing sides, this is called *two-point perspective*. It's visually intriguing to pose an object (or draw one) using two-point perspective, and CorelDRAW helps you set up an object for two-point as well as one-point perspective.

Getting a Perspective on Perspective

Now that you understand what a “normal” lens does to perspective, let’s take a look at a few abnormal (but artistic and creative) perspectives, beginning with no perspective and working our way up. In [Figure 16-1](#), you can see on the left an *isometric* view (also called an *orthographic* view) of the kid’s block. Regardless of the term, it’s unrealistic because the parallels of the cube do not converge. Isometric views of objects are quickly accomplished in CorelDRAW by putting an object into Rotate/Skew mode (clicking once and then a second time) and then skewing the object by click-dragging a middle control handle. Isometric views are completely the province of computer graphics and geometry. They don’t exist in the real world with human eyes, but they are useful in illustration to put equal emphasis on all visible sides of an object. For example, if you want your client to read the side panel of a proposed cereal box design but want the box posed to show more than one side, you’d use an isometric view (occasionally called *isometric perspective*). On the right, you can see the same kid’s block using a wide-angle perspective. In CorelDRAW, such an illustration is accomplished by putting the vanishing points outside of the drawing page. It’s exaggerated mostly because the human eye does not have a field of view as large as 76 degrees—that is, the view is not entirely in focus.

Planes do not converge
on a vanishing point.

Planes eventually
converge in the distance.

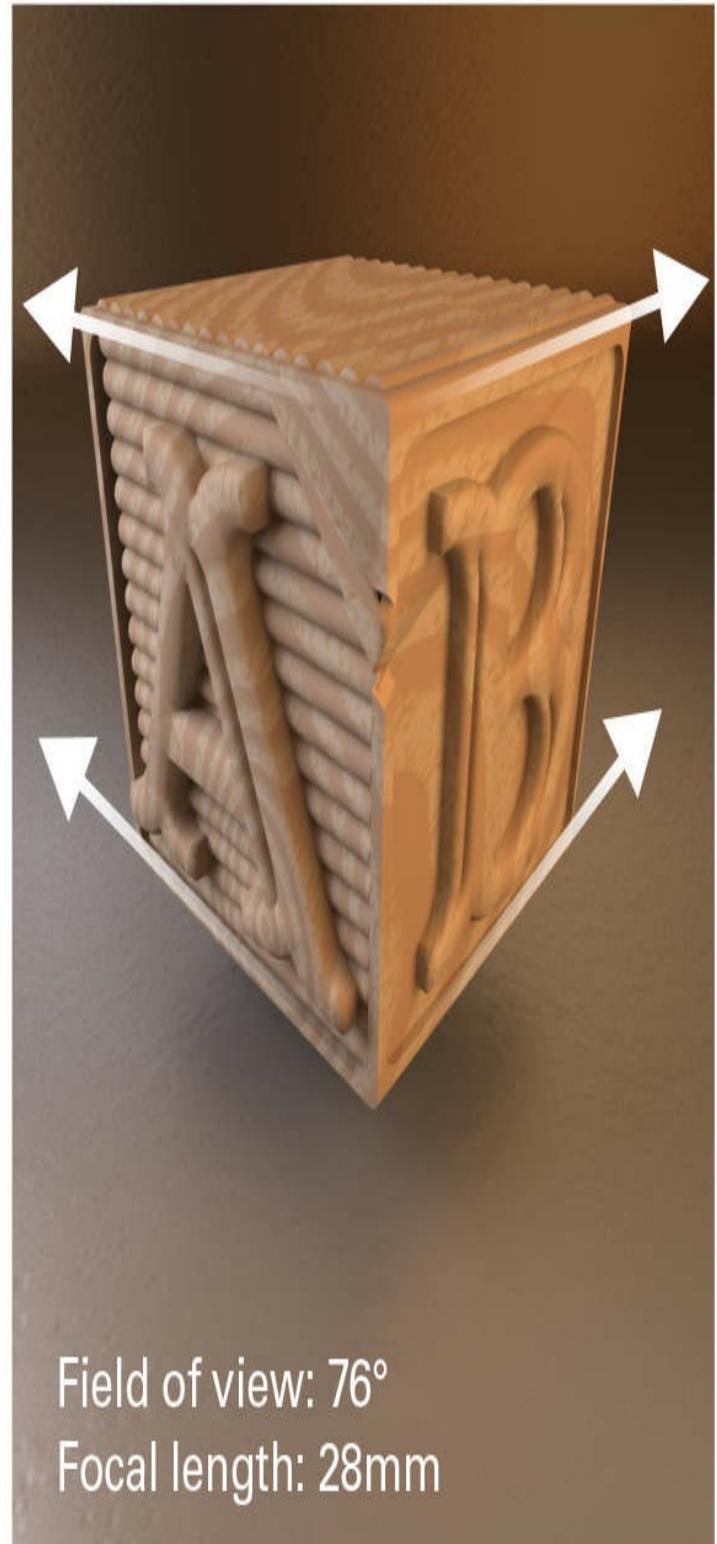
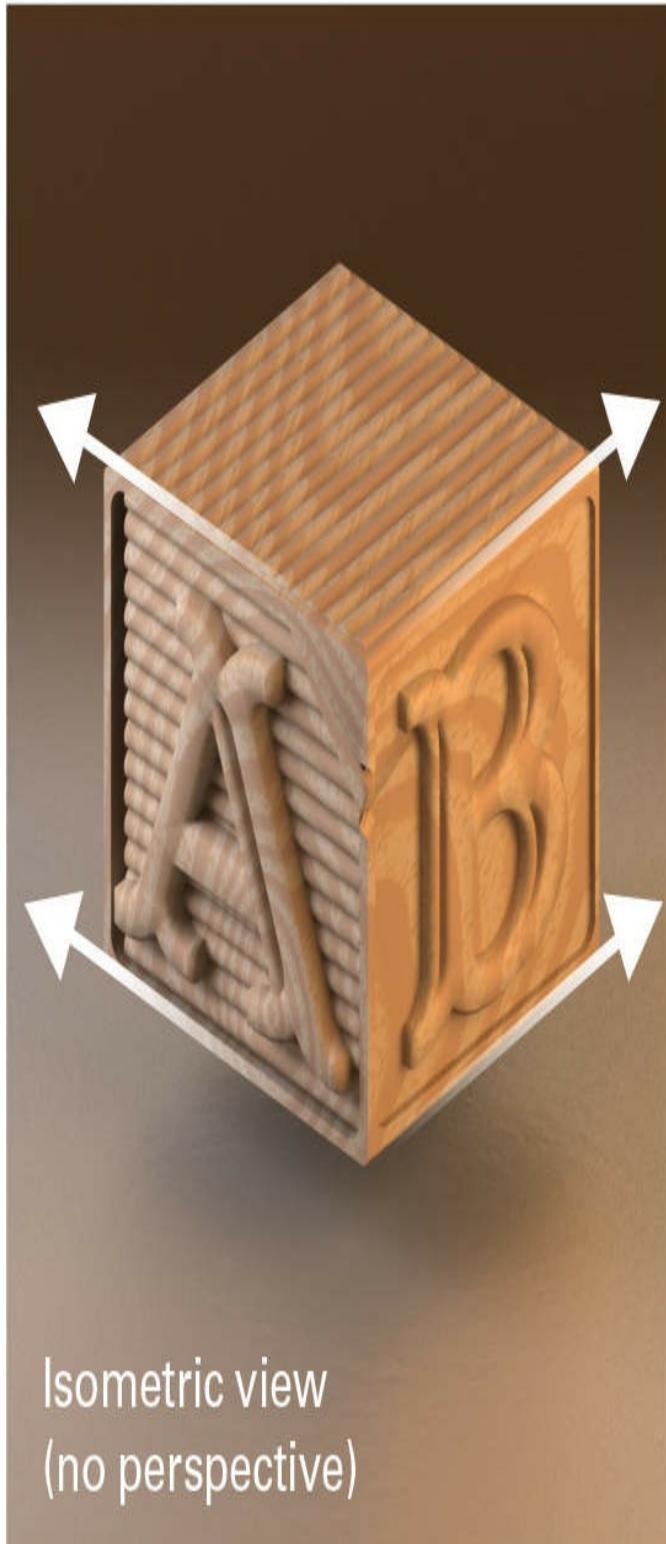
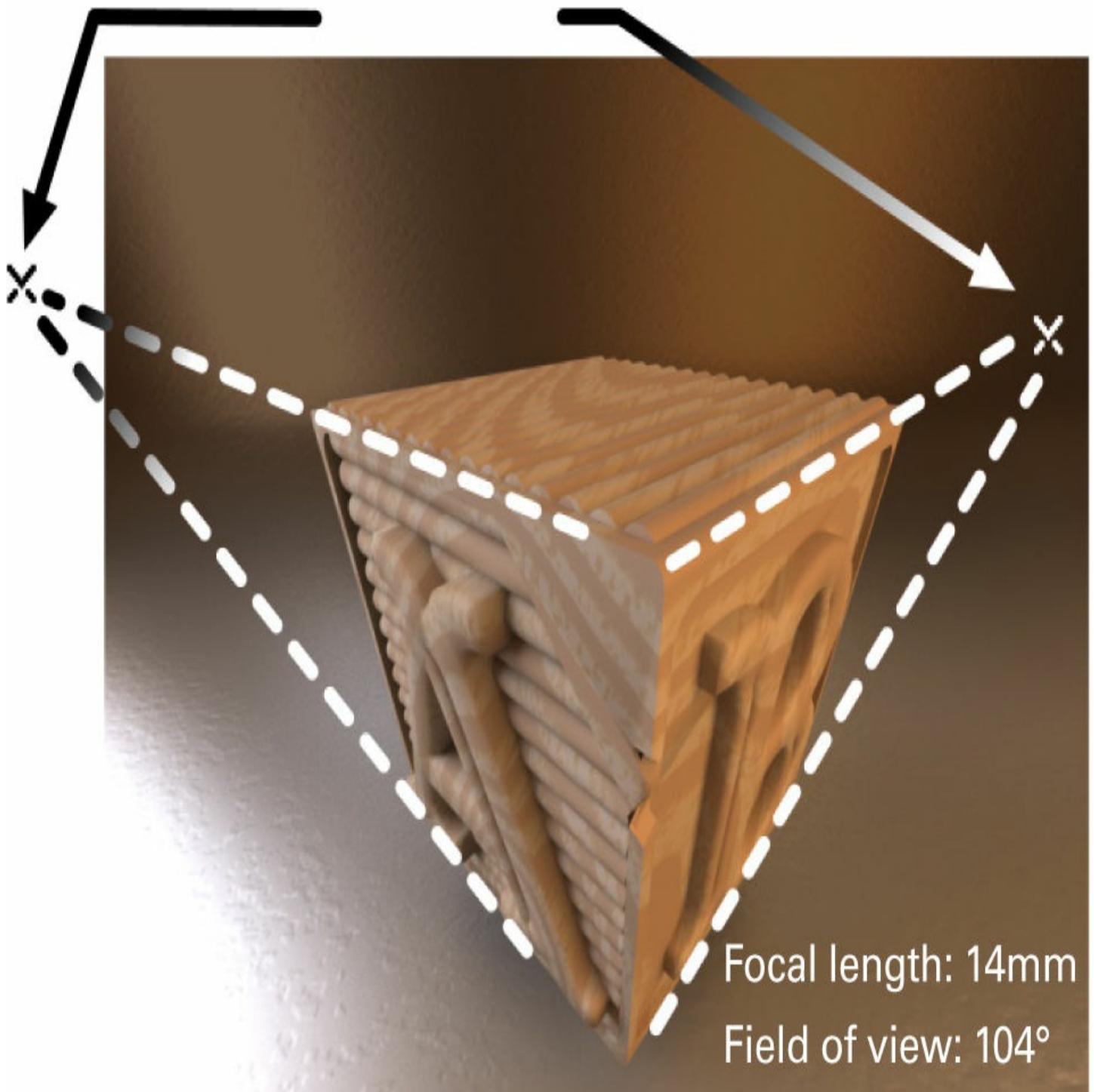


FIGURE 16-1 Example of an isometric view and a fairly wide-angle view of the same object.

The following illustration goes way over the top; the vanishing points are quite close to the object, and the result is dramatic, unrealistic, and unsuitable for presenting a product design. As you read through this chapter, you'll learn that, on some occasions, you want a vanishing point on the drawing page, and on other occasions, you want the "normal" human-eye type of perspective.

Two-point perspective

Vanishing point



Experiments in Perspective

Experimenting with the perspective effect is a lot more fun and rewarding than reading about it. The operations are fairly straightforward, and you'll probably get ideas for future

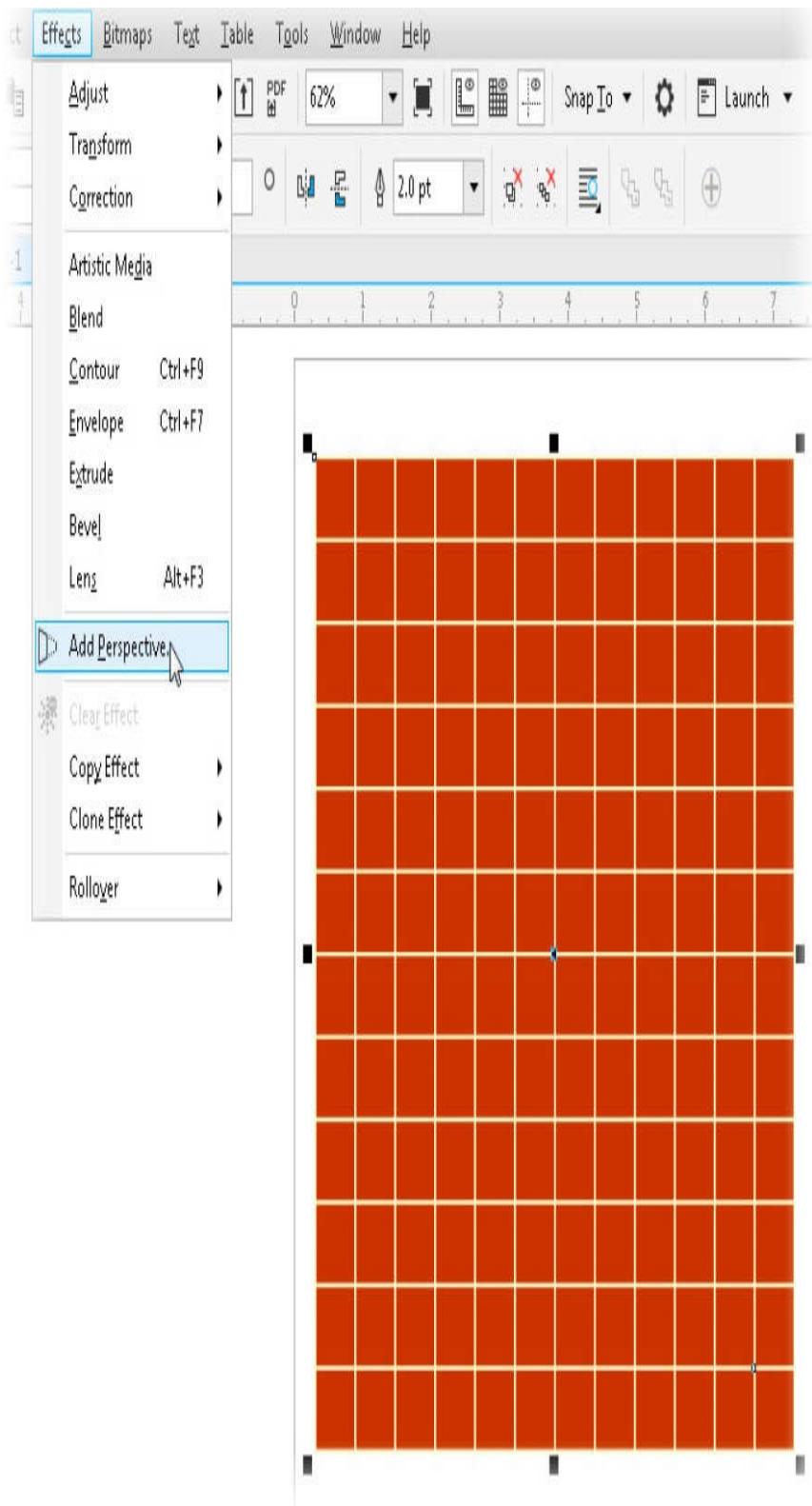
illustrations just by playing with it! Single objects and object groups can be put in perspective; you can change the angle of a perspective shape (or group) by click-dragging any of the four control corners or by click-dragging the vanishing point(s), which changes two of the four control corners at once.

Let's begin with a simple perspective, performed on an object that will immediately give you a reference for what's going on: a 12×12 -cell graph paper object. The perspective effect displays subdivisions in red-dotted lines on top of the object you're manipulating, which provides good visual feedback; with a graph paper object, you'll see exactly how the grid corresponds to the visual changes in the graph paper cells.

Creating Two-Point Perspective

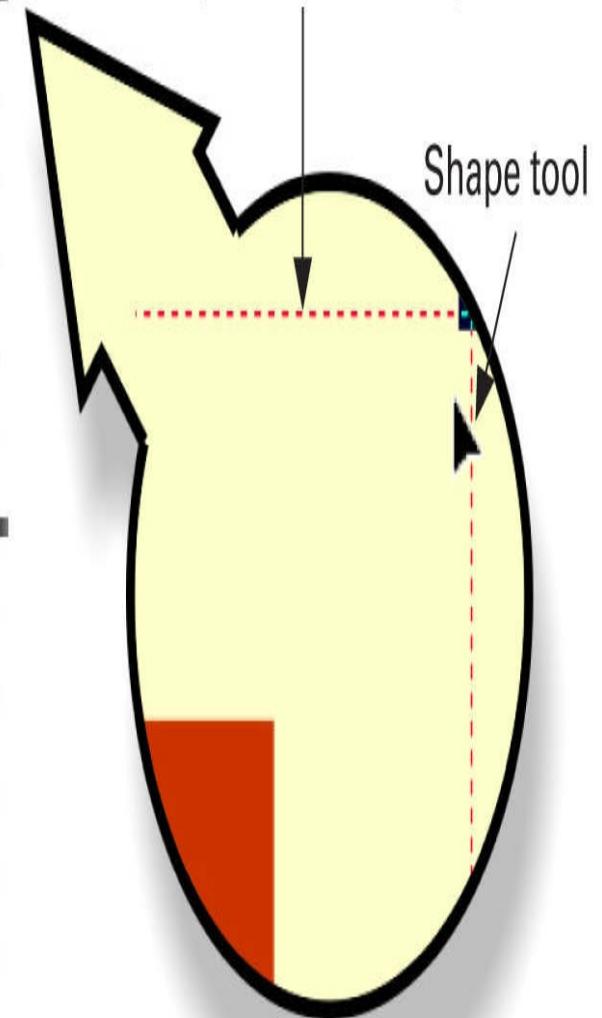
Tutorial

1. Press D, the keyboard shortcut for the Graph Paper tool. On the Property Bar, set the number of columns to **12** and the number of rows to **12**.
2. Hold CTRL while you click-drag to constrain the graph paper object to a square. Make the object fairly large (about 7" is good). Because the perspective effect can appreciably shrink one or more sides of an object, it's a good design practice to create objects that are a little exaggerated in size.
3. Click a deep red swatch on the color palette to set the fill for all the cells and then right-click over a pale yellow to set the outline color.
4. Choose Effects | Add Perspective, as shown here. Your object now has control handles around it, and your current tool has changed to the Shape tool. The Shape tool is used during perspective creation. Additionally, if you intend to edit a perspective effect while you're working on a different area of a design, all you need to do is choose the Shape tool and then click an object that's in perspective.



Perspective boundary

Shape tool



5. Click the top-right handle of the Perspective Effect box surrounding the graph paper object. Hold CTRL to constrain the movement of your cursor to the first direction in which you drag, and then drag down to about the second or third cell in the right column. You've created a *two-point perspective* effect on the object, which shows one *vanishing point*. As you can see, the cells align more or less with the effect's red-

dotted overlay reference, and a vanishing point appears directly to the right. If the vanishing point lies offscreen—which it will when you use a small amount of perspective—press F3 to zoom out so it shows.

6. Click-drag the vanishing point up and then down, as long as this is an experiment and you are not playing for points. Notice what happens: you've defined a one-point perspective. This is the right side of a hypothetical cube, and one-point perspectives have only one vanishing point. So the left side of the object is anchored; it doesn't change with the perspective change.
7. Click-drag the vanishing point left and right. The left side is still anchored, and what you're doing is making the hypothetical box's right side deeper and shallower, extending to and from an imaginary horizon on the page.
8. Save this document; you'll work with it in a moment, so don't close it. This is only the beginning of the experiment with suggesting depth in a 2D document!

There *has* to be a practical use for what you've just learned; adding one-point perspective to a graph paper object by itself is about as exciting as watching grass grow. Here, you can see the result of grouping some text with the graph paper object before applying the perspective effect. The real point here is that one-point perspective can establish a *ground plane* for a dimensional composition—a ground plane has been suggested in this illustration by the effect, the “scene” has depth, and the illustrator obviously can't read signs.



Working with Three-Point Perspective

Using the perspective effect, any 2D drawing can be made to look as though it extends into space, as you proved in the previous tutorial. It's time to up the stakes, however, and create a *second* vanishing point, thus a three-point perspective. This second point will make this graph paper object look as though it occupies space, suggesting visually that the grid recedes away from the page and that its depth is traveling in a direction. This tutorial is going to be fun; by the end of the following steps, you'll have created a great high-tech, sci-

fi background you can use in several design situations.

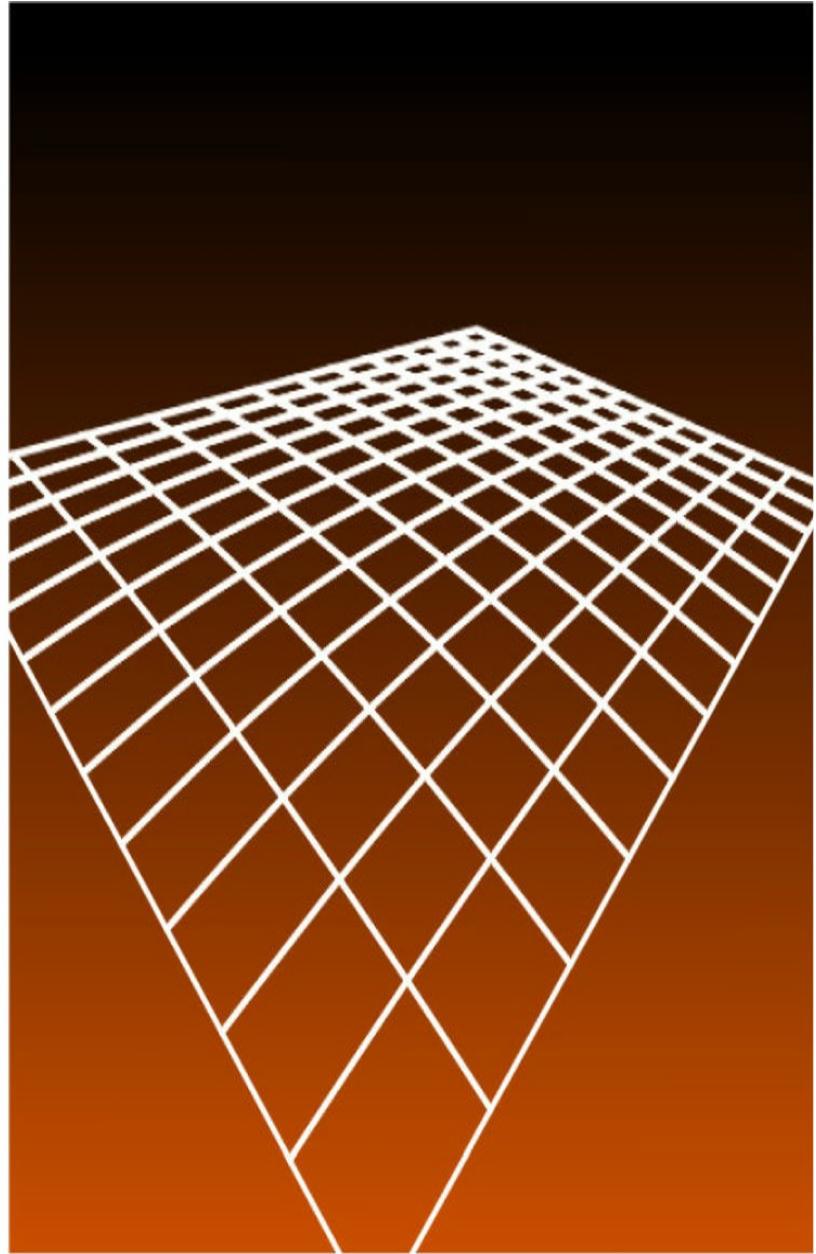
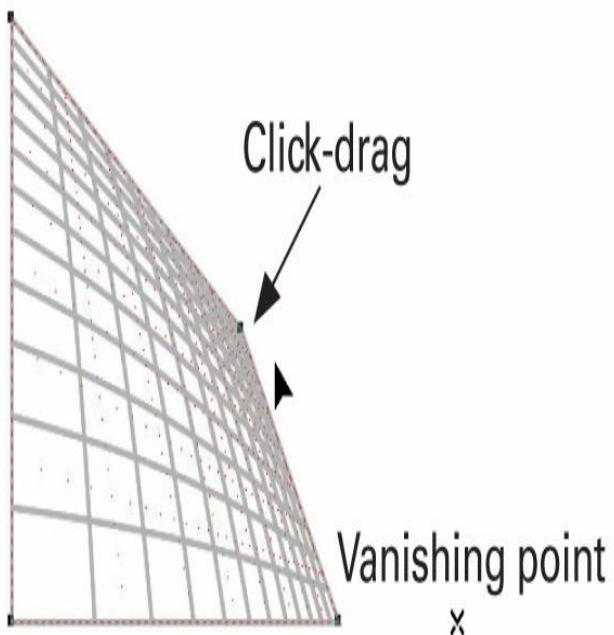
Creating a 3D Ground Plane

Tutorial

1. With the graph paper document you saved in the previous tutorial open, choose the Shape tool and then click the object to reveal its perspective effect control handles and the vanishing point you defined.
2. Click-drag the top-right control handle up and toward the center of the object, until you see a second vanishing point marker at about 12 o'clock on the page. You might want to zoom out to better see the second vanishing point because it is initially defined quite far away from the object. In the illustration after Step 9, you can see how the graph paper object should look. Notice also that because this two-point perspective is so extreme, the graph paper outlines are actually curved to accommodate the severely distorted perspective. This is *not* an optical illusion; the lines are indeed curved now.
3. Choose the Pick tool, and with the graph paper object selected, click it to put it into Skew/Rotate mode. Rotate the object about 45° counterclockwise—stop click-dragging when the Property Bar reports that you've rotated the object by about this amount. Changing the orientation of the object by only changing the vanishing points' positions would be difficult.
4. Choose the Rectangle tool and then click-drag a rectangle to cover the graph paper object.
5. Choose the Fill tool, and then click-drag from top to bottom on the object so the top is black, fading to white at the rectangle's bottom. Then choose a red from the color palette to fill the End color indicator of the fountain fill.
6. Choose the rectangle with the Pick tool and then press SHIFT-PAGE DOWN to put the rectangle on the back of the drawing page, behind the graph paper object.
7. Choose the graph paper object and then right-click the white color well on the color palette. Then double-click the Outline Pen swatch on the Status Bar to open the Outline Pen dialog.
9. Type 4 in the Width field and then click OK to apply this width. You're done and your composition looks like the following illustration.

Vanishing point

X



0. Left-click the No Fill swatch now while the graph paper object is selected.



Tip The outline properties of an object possessing the perspective effect do not diminish in width along with the shape of the object. If you need outlines to follow a perspective, you need to first convert the outlines to objects: press CTRL-U, for example, to ungroup a graph paper object, and then choose Object | Convert Outline to Object (CTRL-SHIFT-Q). Then, group the objects once more to apply perspective.

Copying Perspective and Creating a 3D Scene

Like many of the features in CorelDRAW, a perspective can be copied from an object and applied to a different object using the options on the Property Bar. Being able to instantly copy and match perspective between objects in a composition can turn the entire drawing into a 3D event, as the following tutorial demonstrates.

In the Commuters.cdr file you downloaded, you'll see several characters you can use, or you choose to use your own in the following tutorial. The idea is that these fellows are so self-absorbed they're going to miss the train pulling in behind them unless they look to the right a little. So you'll apply a perspective to one guy, copy the instance of the perspective effect to the rest of the gang, and then embellish the composition a little to give the drawing true depth.

Perspective Scenes via Copying

Tutorial

1. Open Commuters.cdr. Select the guy on the left side of the page and then choose Effects | Add Perspective.
2. Click the top-right control handle on the object and then drag down a little. Next, click-drag the bottom-right control handle and then drag up and to the right until the commuter is facing right in perspective, as shown in [Figure 16-2](#). You might not see the vanishing points on the page because this perspective is not severe enough.



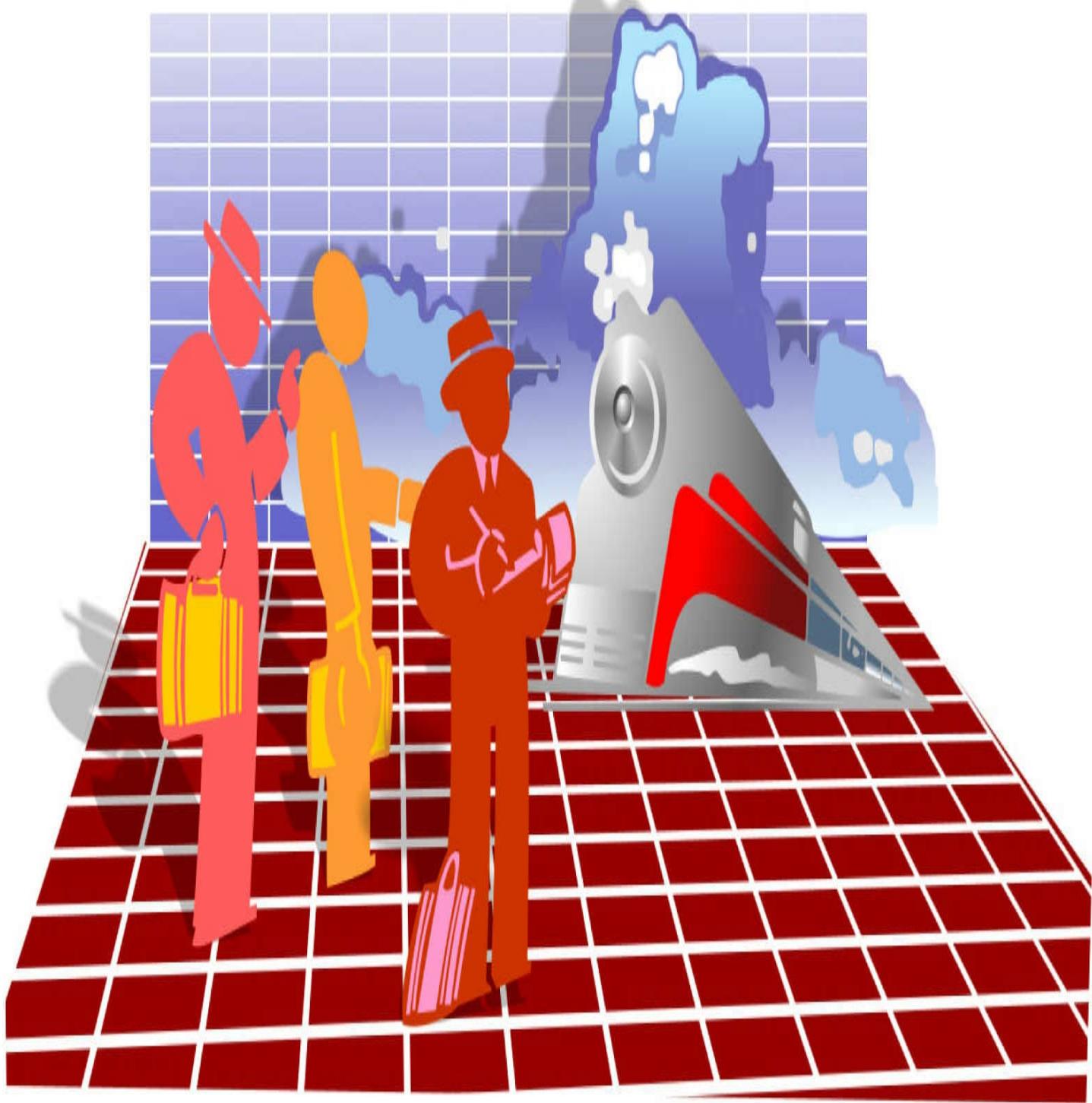
FIGURE 16-2 Create just enough perspective to give the shape some dimension.

3. Choose the Pick tool now. Click the guy with his hat in his hand and then choose Effects | Copy Effect | Perspective From. Click over the guy on the left that has the perspective shown here, and the second object adopts the perspective of the first.



4. Repeat Step 3 for the guy holding the writing pad.
5. Create a graph paper object and then give it a deep red fill and a white outline. Put it to the back of the illustration.

6. Put the graph paper in perspective to make a ground plane. Next, drag the top-left control handle to the right and then drag the top-right control handle to the left until you see a vanishing point just above the graph paper object. This object's perspective should be very distorted, suggesting a horizon at about the chest level of the characters.
7. Create a second graph paper object, choose Object | Group | Ungroup, and then choose Object | Combine so the graph paper object is truly a single path.
8. Give it a medium- to light-blue fountain fill, and give its outline a white property exactly like you did with the first object in Step 5. Put it to the back of the drawing (SHIFT-PAGE DOWN).
9. From here on out, the steps will “ground” the characters on the graph paper below them. To begin, click any of the fellows and then choose the Drop Shadow tool from the Effects group of tools on the Toolbox.
0. Choose Perspective Top Left from the Presets drop-down on the Property Bar. With your cursor, click-drag the black control marker for the shadow down and to the right until the shadow looks correct.
1. Repeat Step 9 with the two other commuters. Select a guy, choose Effects | Copy Effect | Drop Shadow From, and then click the first shadow (not the object casting the shadow) you defined. You can also add a shadow to the train and the cloud group of objects. Additionally, try moving the commuters up or down from their original position to increase the sense of depth in the scene. Your scene should look like the illustration shown here.



Tip You can quickly put any object that has the perspective effect into Editing mode when the Pick tool is the current tool by double-clicking the object. Also, if you want to mirror the perspective effect—to make a symmetrical perspective—hold CTRL-SHIFT while you click-drag a control handle.

Pre-visualizing Designs in Perspective

Often you'll design something such as a pattern and will want to see what it would look like as a garment, giftwrap, or some other physical piece of art before you pay to have the design printed. You can do this in CorelDRAW with the perspective effect. In the following example, you'll create a simple giftwrap pattern; then, using perspective, you'll virtually wrap a package. The package is provided for you as an image on layers in a CorelDRAW document.

Let's use CorelDRAW's Artistic Media tool to create the giftwrap for the present in the following steps.

Pre-visualizing a Design on a Product

Tutorial

After creating a new document (choose Landscape orientation), press CTRL-I to import the file A present.cpt. If you get an attention box that says there's a color profile mismatch, click the Convert from Color Profile to Document Color Profile button and then click OK. Now, just click at the upper left of the page to place it to size.

1. Open the Object Manager from the Window | Dockers | Object Manager menu. Expand the “A present.cpt” entry to reveal the two image objects.
2. Click the New Layer button at the bottom left of the docker. Doing this creates a new default named “Layer 2.”
3. Click-drag the “Bow” entry on the Object Manager and place it on the Layer 1 title. Doing this destroys the list entry “A present.cpt,” and the bow and the present objects now both belong to Layer 1.
4. Drag the “Bow” object now from Layer 1 to Layer 2. Layer 1 will only contain the “A present” object now. The Bow object is above the present.
5. Create a new layer, which by default is named “Layer 3.” Click-drag it to below Layer 2. Here is where you'll design the giftwrap.
6. Choose the Artistic Media tool located just under the drawing tools group on the Toolbox. Then choose the Sprayer button on the Property Bar. You can use any preset you like, such as one of the Festive Food presets.
7. Create a rectangular area by scribbling up and down, like making several *Ws*.
8. Choose Object | Break Artistic Media Apart (CTRL-K works, too). With the Pick tool, select first and then delete the parent black path that's now visible (see [Figure 16-3](#)).

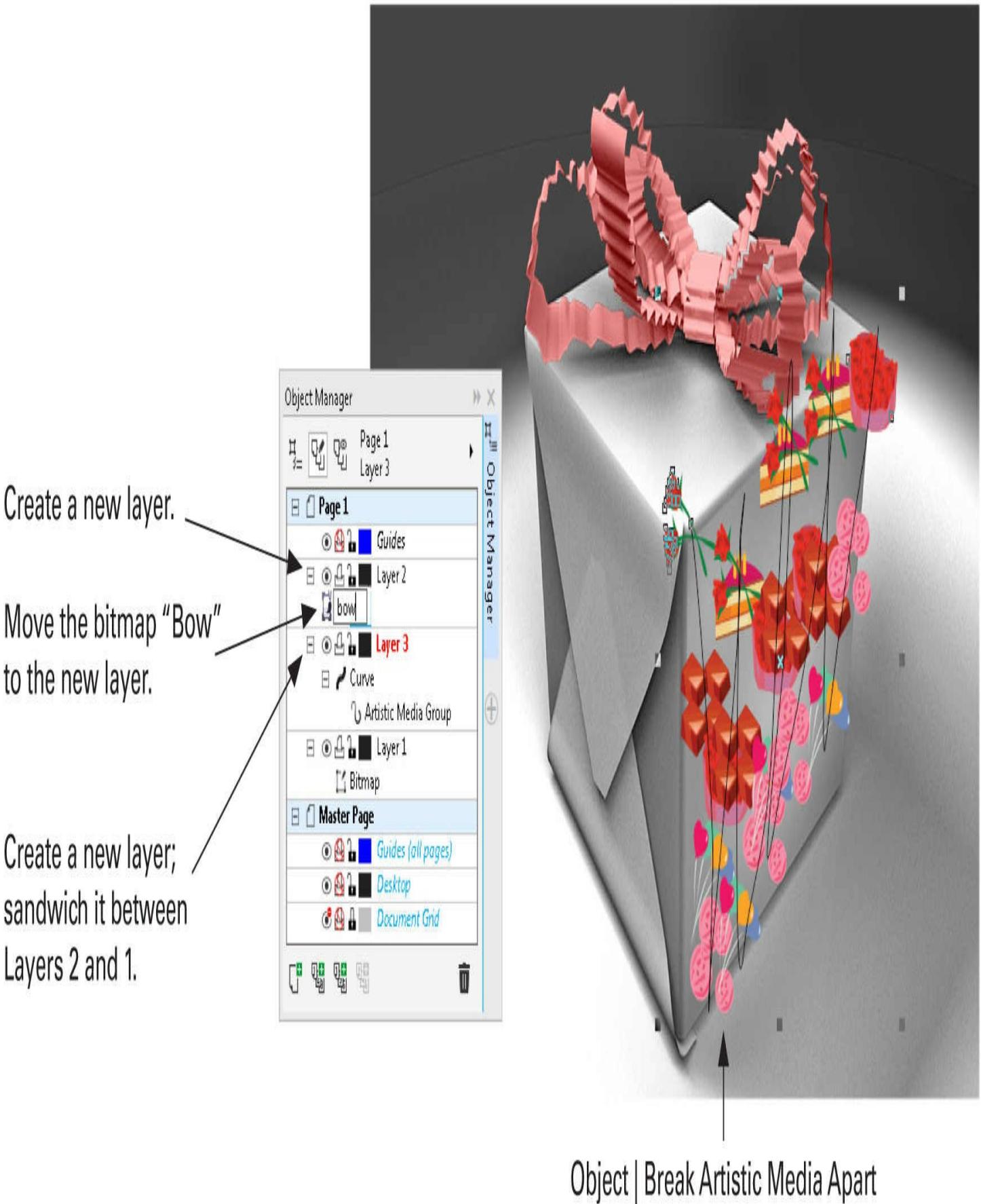
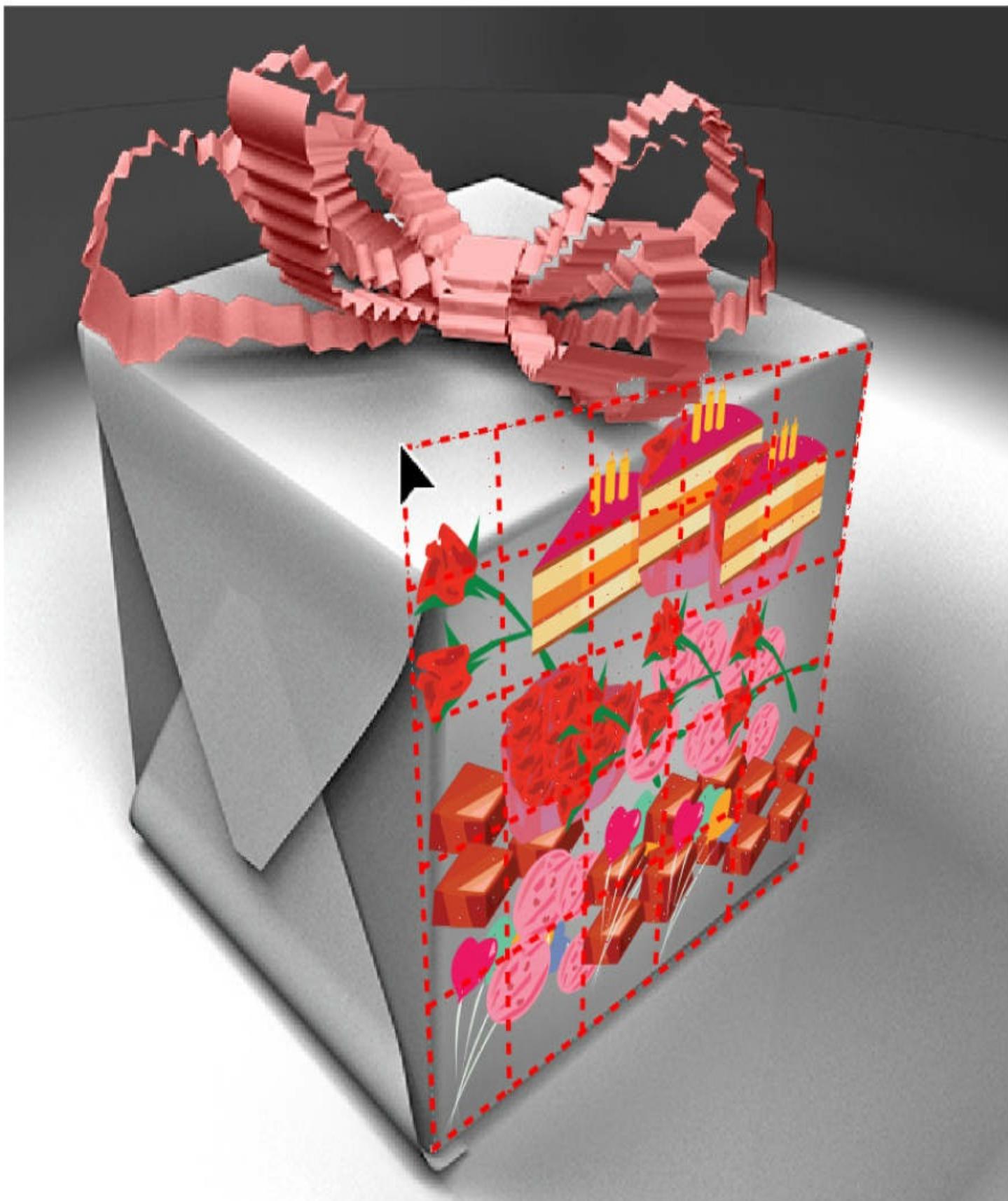


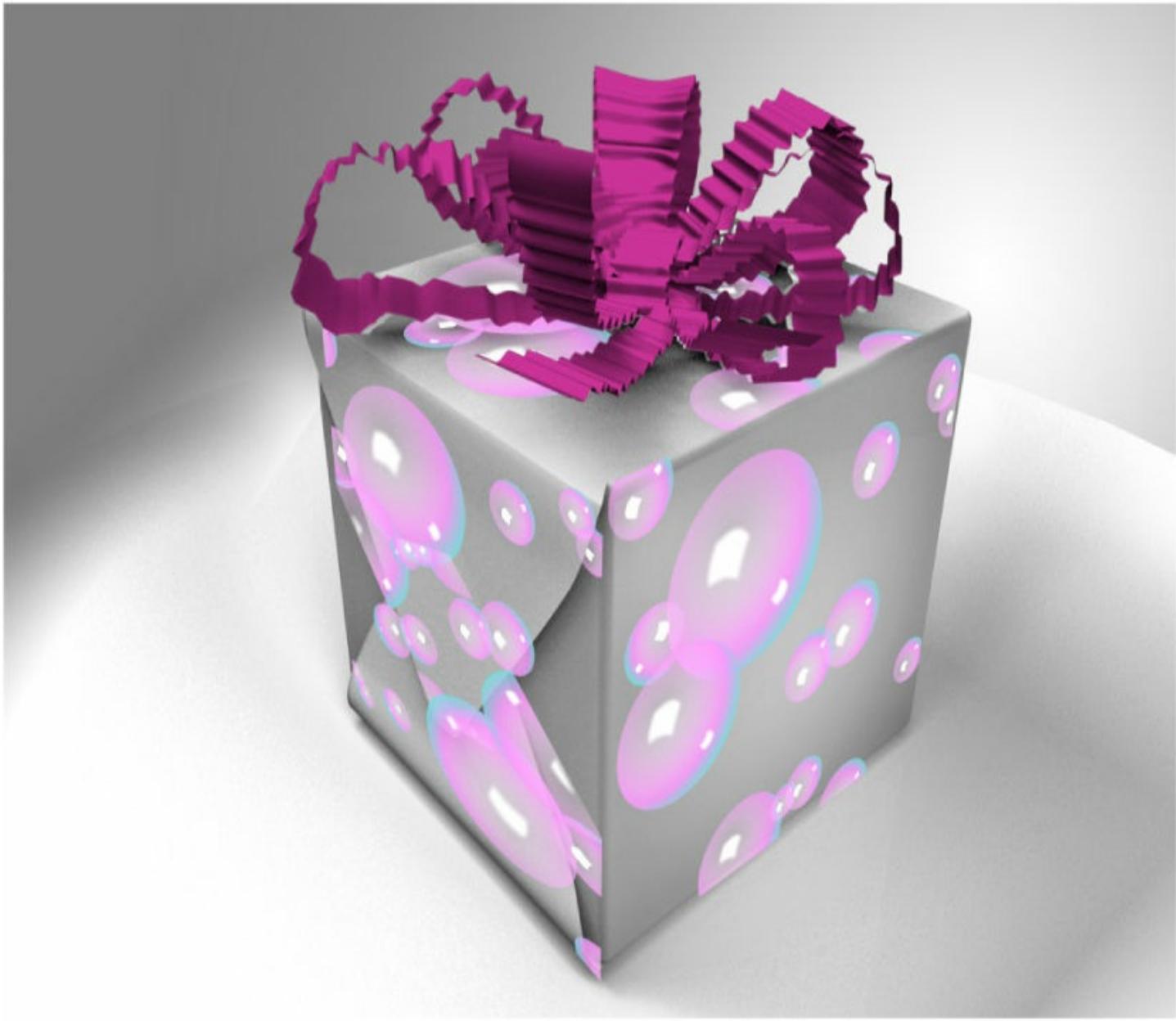
FIGURE 16-3 Create a pattern with the Artistic Media Sprayer tool.

9. Select the Sprayer shapes. Then, choose Effects | Add Perspective. With the Shape tool, drag, one at a time, the control handles for the effect to match the four corners of the face of the present, as shown here.



0. Duplicate the pattern (press CTRL-D) and then use the Shape tool to edit this duplicate (which also has the perspective effect) so it matches the four corners of the top side of the present. Because the bow is on the top layer, you're actually adding the top pattern in perspective below the bow so it looks optically correct.
1. Repeat Step 10 to create the left panel of the pattern on the present.
2. The pattern shouldn't look totally opaque, but instead should take on a little of the shading on the blank present. The quickest way to apply transparency to the scores of objects that make up your Artistic Media stroke is to turn the pattern into a bitmap. First, let's check out the resolution of the present image so the conversion of the giftwrap pattern isn't unnecessarily larger than the present or bow images. After choosing the Pick tool, click either the "Bitmap" or the "Bow" entry on the Object Manager list and then look at the Status Bar. The correct answer is 96 dpi.
3. Select one of the patterned sides and then choose Bitmaps | Convert To Bitmap. In the Convert To Bitmap dialog, choose **96** in the Resolution box, check the Transparent Background box, and then click OK.
4. With the new bitmap selected, choose the Transparency tool on the Toolbox. On the Property Bar, click the Uniform Transparency type, choose Multiply Style, and then play with the amount of transparency your eye tells you looks best and visually blends the pattern into the present. Repeat Steps 12 and 13 with the other two sides of the gift, be sure to include a card, and then send it to someone who deserves a present.

This finished pre-visualization provides you and your client with a view of the goods you've designed, as they will appear from the customer's point of view, which is perhaps the best "perspective" effect of all. This illustration shows a finished version of the tutorial, using the bubbles from the Misc. category of spray patterns.



Extruding Objects: How Extrude Works

Although CorelDRAW is a 2D vector drawing application, the Extrude feature adds a simulated third dimension by adding objects that are shaded and in perspective. This section takes you through the rich feature set of the Extrude tool, offers some creative possibilities for its use, and gets your head around the initial challenges of navigating 3D space in CorelDRAW.

CorelDRAW's extrude effect examines the geometry of an object and then, with your input, creates dynamic extensions to all path segments, suggesting the added objects recede into the distance to a vanishing point. [Figure 16-4](#) shows some finished artwork based on objects that are easy for you to draw in CorelDRAW. The train composition uses *several* extruded objects, and shapes were added manually after the extrudes to make the scene

look even better. Specifically, all the shadows you see were manually drawn on top of areas. You need to be imaginative to place the extruded object in context, within a scene, to build a complete graphical idea. The Extrude tool doesn't create "Auto-Art." It's a tool; it needs your creativity to guide it.

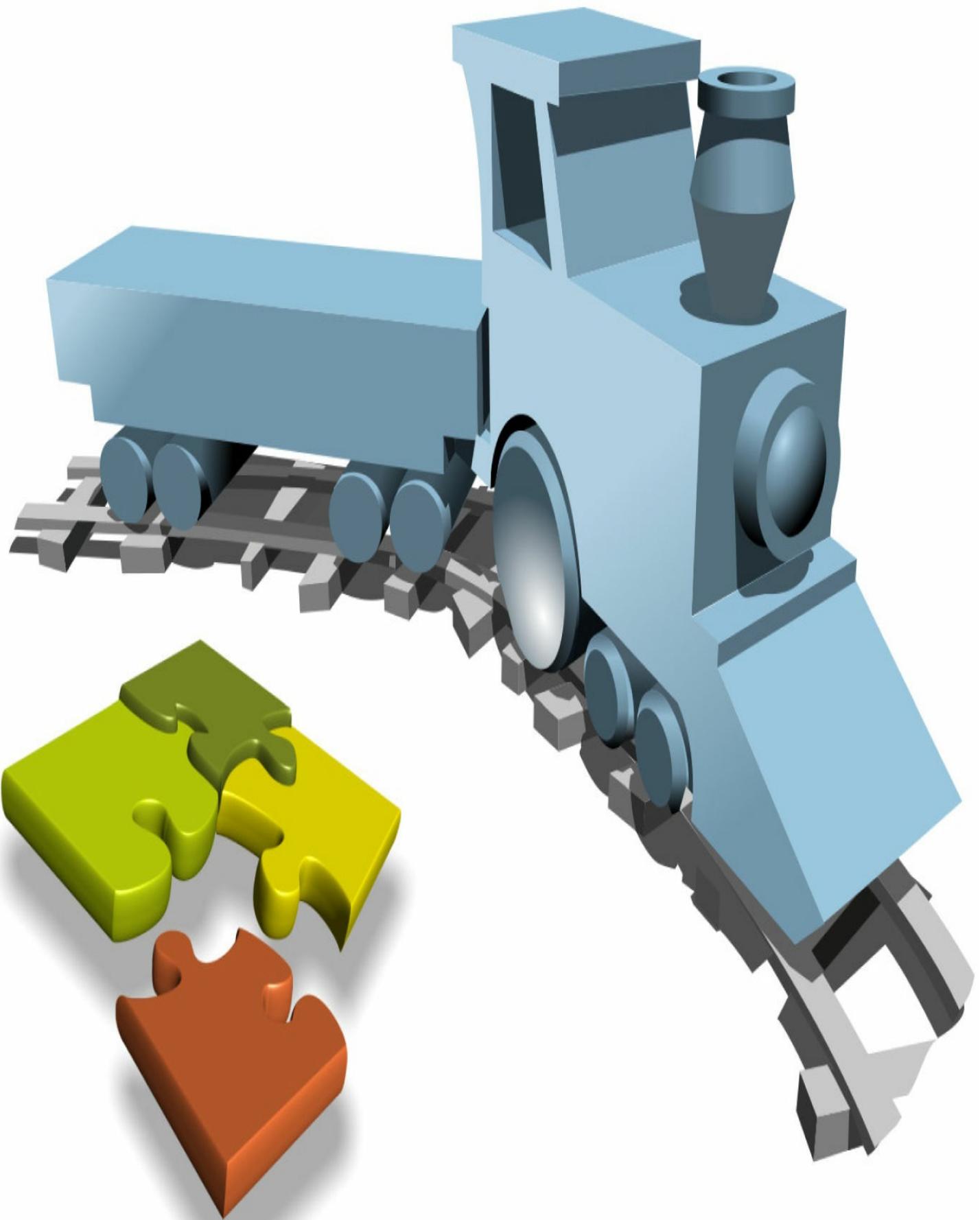


FIGURE 16-4 Imagine what an object looks like when projected into a third dimension and then manually add what's missing.



Tip When extruding objects, don't limit your perception of an extruded circle as a coin shape. You will see later in this chapter that if you create a deep extrude out of a circle and then rotate the object by 90° from left to right, you have a straw or other cylindrical shape.

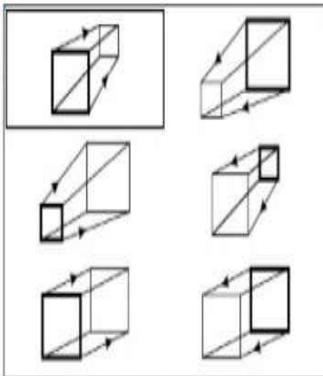
When an extrude effect is applied to an object, the original becomes a *control object*, and the extrude effect objects become a dynamically linked group. Any editing you then perform on the properties of the control object, such as fills and edits to the outline of the control object, are immediately updated in the linked extrude group.

Be aware that both lighting and the control object's geometry impact how many extrude group objects are created. Although you don't usually need to concern yourself with how many objects are dynamically created to make an extrude, the sheer number of objects can slow down redraws of your page when you have, for example, hundreds of objects in the extrude group. When CorelDRAW creates an extrude group, it calculates lighting (when you *use* lighting, covered later in this chapter) and creates extrude group objects based on curved path segments in the control object.

Choosing and Applying an Extrude Effect

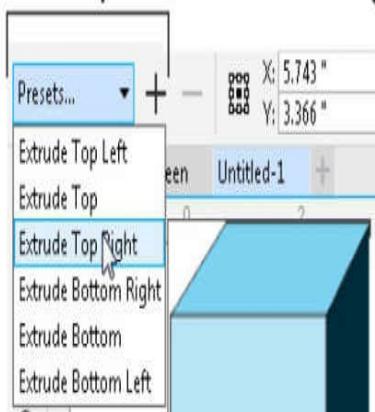
The extrude effect can be applied interactively using the Extrude tool, which is located in the Toolbox with other effects tools, or you can choose from the Presets list to create a 3D object instantly.

While you're using this tool, the Property Bar provides all the options for setting the effect's properties. Browse the Property Bar options shown in [Figure 16-5](#). Options are grouped into areas for saving your applied extrusions as Presets, controlling the shape, depth, vanishing point position, rotation, lighting, color, and bevel effects.



Extrusion type

Preset options

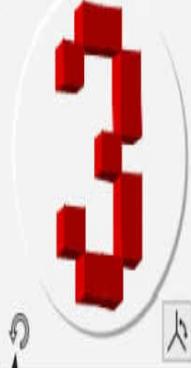


Vanishing point coordinates



Depth
Page or object vanishing point

Vanishing point properties



Reset rotation



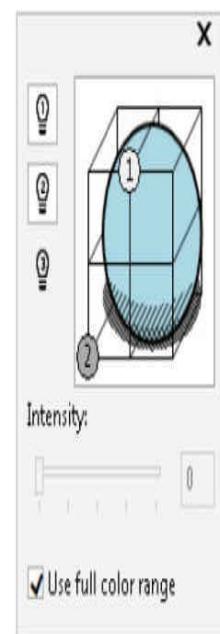
Extrusion rotation

Extrusion color
Extrusion bevels
Copy extrude properties



Clear Extrude

Extrusion lighting



✓ Use full color range

FIGURE 16-5 The Property Bar contains all the options for defining and saving the look of an extrude.

Navigating the Interactive Markers

When you decide to extrude a shape manually, interactive markers appear around the resulting object after you perform the first step in the extrude operation, which is click-dragging on the face of the object you want to be the control object. The interactive markers offer you control over the position, depth, and vanishing point position of the 3D object. You'll create a 3D object by hand in the following tutorial, so familiarize yourself with the elements that surround a 3D extruded shape, as shown in [Figure 16-6](#).

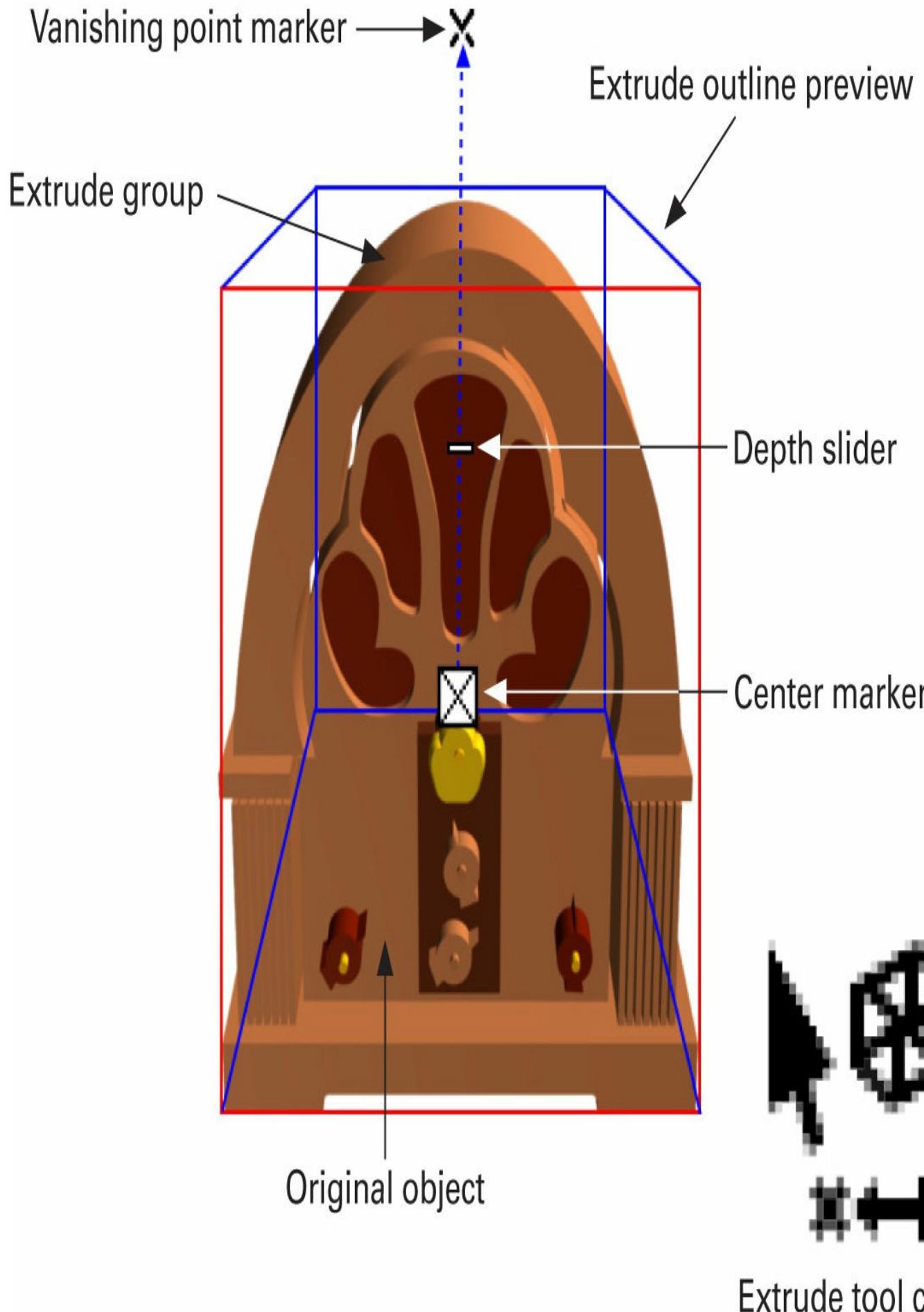


FIGURE 16-6 These control handles are used after an object is initially extruded to change the appearance of the extrude.



Note If at any time in this chapter you feel like trying out the cathedral radio objects as extrude targets, the file is called (oddly enough!) Cathedral Radio.cdr, and can be found in the [Chapter 16](#) zip archive.

Alternatively, you can apply a Preset extrude effect to get a 3D version of a shape in lightning time; however, you might want hands-on control over creating the extrude effect. Follow this tutorial to get a handle on what some of the Property Bar options do to an extrude effect.

Going Deep With the Extrude Tool

Tutorial

1. Create an object to be the control object for the extrude. A rectangle produces results that make the relationship between the face of the object and the sides clear, but not very artistic. Try a star shape for more dramatic extrude results. Give the shape a fill (a fountain fill will produce a stunning effect), and give the outline a contrasting color such as white so you can visually track where the extrude objects are created.
2. Choose the Extrude tool, and your cursor changes to the Extrude tool cursor, which is hard to mistake for the Pick or Pen tool. When held over your object, the cursor indicates a Start extrude position by displaying a tiny shape with a direction line below the symbol of an extruded cube.
3. Drag from the center of your object outward in any direction, but don't release the mouse button. The control object now has interactive markers and a Wireframe preview of the front and back boundaries of the extrude; the front of the object is bounded by a red outline, and the back of the 3D shape is bounded by a blue outline. The preview indicates the length and direction of the extrude effect, and the X symbol you're dragging is the *vanishing point*. As discussed earlier in this chapter, a vanishing point is a geometric indicator of where parallel lines on a surface would converge at the horizon if the surface were actually to extend to the horizon. Once you're satisfied with the extrude Wireframe preview, release the mouse button. Now you can edit the extruded object and immediately see the results.

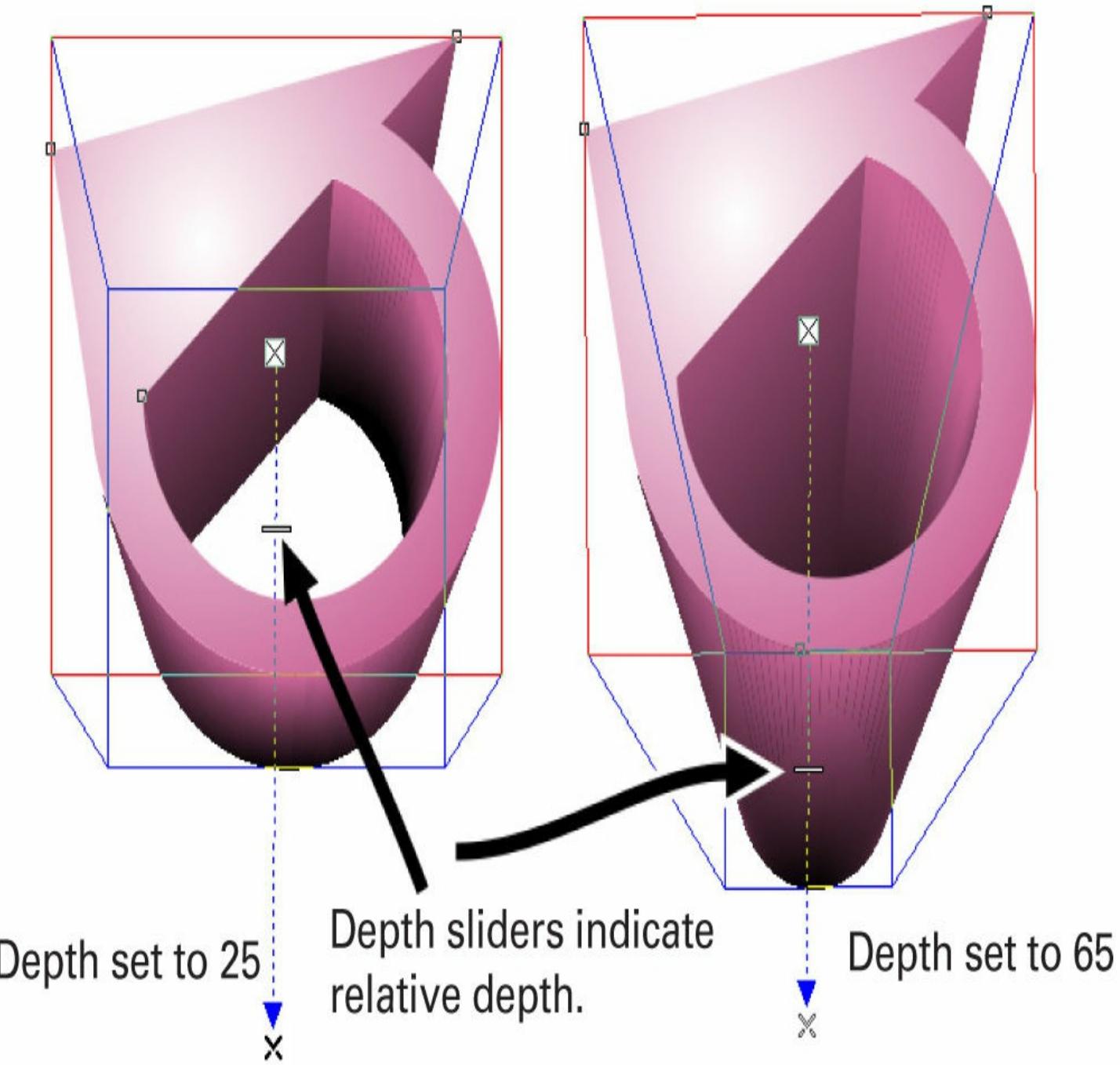
4. Drag the vanishing point X symbol around the page; not only does the preview outline change, but also, more importantly, the view on the 3D object also changes. When the vanishing point is above the control object, you're looking down on the object; similarly, you move your view to expose the side of an object in direct correlation to the position of the vanishing point.
5. As you use the Extrude tool, you define both the direction and depth of the 3D object. Try dragging the Depth slider toward and then away from the control object. Notice how you first make the extrude a shallow one and then a deeper one, all while the sides extend in the direction of the vanishing point. At any time from when you create the object by releasing the cursor, you can also set the object depth by using the Depth spin box on the Property Bar.
6. Click outside of the object, and the extrude operation is complete. However, because extrude is a *dynamic* effect, you can change its appearance at any time in the future by double-clicking the extrude group with the Extrude tool to once again display the interactive handles.

Using the Extrude Tool and Property Bar

Like other effects, extrusions can be set using the Property Bar. However, regardless of your work preferences, version X8's Extrude feature produces the same results whether you use the Property Bar controls or the Extrude tool. The following sections walk you through some of the design options you have when you use the Extrude tool.

Setting Extrude Depth

Extrude depth is based on the distance between the control object and the vanishing point. You will get different appearances using the same depth value but different styles, and you can set extrude depth as high as 99. Here, you can see a shallow and a deep extrude, using two different depth values but the same extrude style. You can control object depth manually by dragging the interactive Depth slider on top of the object, or you can enter values in the num box on the Property Bar (press ENTER after typing a value; the spin box controls update the object without your needing to press ENTER).



Setting Vanishing Point Properties

The direction of the vanishing point determines only the point toward which objects diminish; it does not control whether the extruded portion extends from the front or back of the object. Using the Vanishing Point Properties drop-down on the Property Bar, you can lock an extrusion's vanishing point, copy vanishing points from an existing extrusion, and share vanishing points between extruded objects.

Here are the options for vanishing points, including how they can be set and shared between different extruded objects:

- **Locking to the object** Choosing the VP Locked To Object option (the default setting)

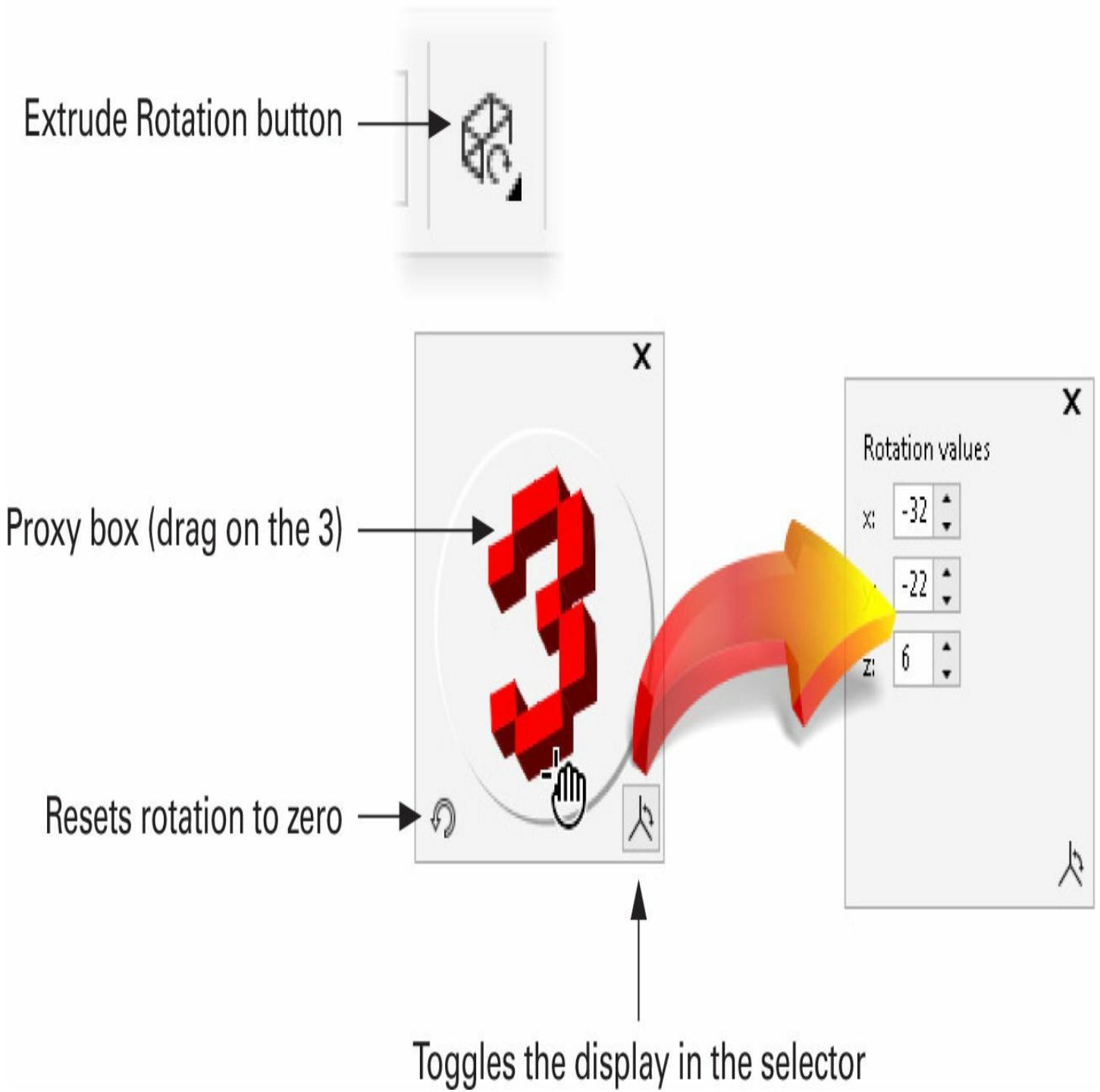
fixes the vanishing point to a position relative to the object, regardless of where the original extruded object is positioned.

- **Locking to the page** The VP Locked To Page option allows you to tack the vanishing point to your page, forcing the extrusion to diminish toward a fixed page position, no matter where the original object is moved. Try it to see for yourself the effectiveness of this setting: lock the vanishing point of an extruded object to the page, and then move the object using the Pick tool; you'll see that the sides of the extrude dynamically update to always show the object's correct perspective.
- **Copying vanishing point from** The Copy VP From command doesn't define a vanishing point like the other drop-down choices do; instead, you use it to copy an existing vanishing point. Copying a vanishing point lets you set up several extruded objects on a page, and in a few clicks, the objects all appear to be facing the same direction, at a common point of view from the audience's perspective. Immediately after you choose Copy VP From, your cursor changes to a vanishing point targeting cursor (a really, really large arrow), which you use to target any other extruded object on your document page, with the goal of copying its vanishing point position. For this command to be successful, you must have at least one other extrude effect applied to an object and in view. After the vanishing point has been copied, the Property Bar indicates the object's vanishing point as VP Locked To Object, and the vanishing point can now be moved.
- **Sharing vanishing points** Choosing Shared Vanishing Point lets you share the *same* vanishing point among several objects, but you must have applied at least an initial extrude effect to your objects before attempting to use this command. Immediately after you choose this option, your cursor changes to a vanishing point targeting cursor, so you can now target any other extruded object for the purpose of creating a common vanishing point position for multiple objects. This option creates a similar effect to copying vanishing points, but the overall effect is every object on the page is in the same scene. You can move two or more selected objects simultaneously and change the perspective of all of them.
- **Setting a relative position for vanishing points** The Page or Object Vanishing Point button on the Property Bar is used to toggle the measurement state of object vanishing points between page and object. When the option is inactive (the button is not depressed), the vanishing point position boxes allow you to specify the vanishing point relative to your page origin—a value determined either by the lower-left corner, by default, or by the zero markers on your ruler origin. When the option is active (the button is depressed), the center of your currently selected object is used as the measurement value, which changes according to the object's page position. You will see this most noticeably if you have a depth on an object of more than 40 and you drag the object around the page with the Pick tool. The extrude group actually changes to reflect different vanishing point views.

Setting 3D Rotation

Beginning your extrude adventures with the object facing you is a good starting point in your 3D experience, but not always the most visually interesting of poses. You can *rotate* extruded objects after extruding them via the Property Bar or via the interactive control handles. Create an extrude group of objects and then we'll begin with the precise, noninteractive method of rotation you access on the Property Bar when you've chosen the Extrude tool and selected an object. VP Locked To Object is necessary for this trick to work.

The Rotation pop-up menu offers a proxy box that you use by click-dragging on the “3,” as shown next. As you drag, a faint yellow line appears on the 3, indicating the current rotation of the object and the proposed new rotation once you release the mouse button. You might not always get the exact look you need using this technique because of the position of the object's vanishing point—your experience can be similar to levering an object seesaw-fashion when the pivot point (the fulcrum) is 15 miles away! To avoid imprecision, you can click the toggle button labeled in the illustration. The value fields have spin box controls that increase and decrease the values by 5; you probably want to enter values manually because a single percent of rotation (from 0 to 100 percent, not degrees) can be quite significant, considering only 100 of them are in this pop-up box. If at any time you find you've gotten too deep in this 3D rotation stuff, clicking the Undo curved arrow icon on the lower left of the selector, as shown here, resets all rotation values to zero.

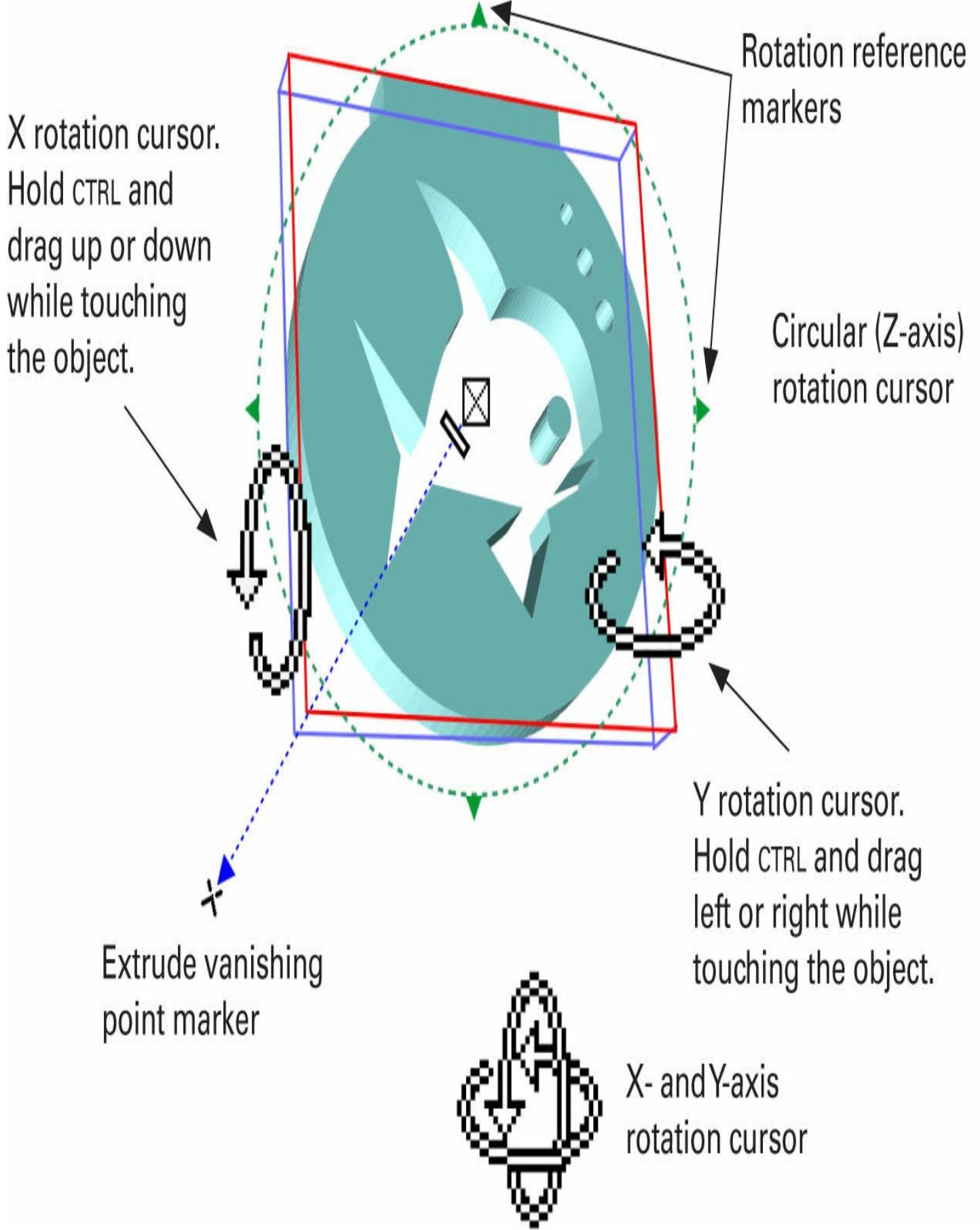


Overall, the best teacher is experience, particularly with manipulating your view of a 3D object in CorelDRAW. Set aside some quality time, and you might even be pleasantly surprised by some of your errors!

Using the Rotation Tools

You don't have to use the Extrude Rotation pop-up box on the Property Bar to rotate an extruded object: you can define a degree of rotation along the X, Y, and Z axes of any object by click-dragging the object directly. To do some manual rotation, the object needs to be extruded and first put into Editing mode—you can double-click on the extrude group

of objects with the Pick tool to put the object into Editing mode, and then click a second time to expose the control handles shown here.





Note If either Back Parallel or Front Parallel is selected, the Extrude Rotation controls are unavailable; parallel extrusions have no vanishing point, so there's nothing to pivot with. Also, when the vanishing point is locked to the page, Extrude Rotation cannot be performed.

When an object is rotated, you can't use the vanishing point controls on the Property Bar, mostly because mathematically, the vanishing point is nowhere near your drawing page. If you need to adjust an object's vanishing point, you must work backward; on the Extrude Rotation pop-up panel on the Property Bar, click the Reset Rotation icon. Then the vanishing point options and controls become active (and your object is no longer rotated).

Adding Lights

Adding lighting to an extruded object can spell the difference between an effect and a piece of artwork that truly attracts a viewer with its realistic appearance; many of the figures in this chapter use the Lighting option. To access the lighting controls, click the Extrude Lighting button on the Property Bar while selecting an extrude effect.

Working with the Options in the Lighting Control Window

Three independent light sources can be activated, positioned, and adjusted for intensity and to set whether all the control object's colors are used in the extrude group (the Use Full Color Range option). These lights perform like bare light bulbs. You can reposition them, but not aim them as you would a real flashlight or spotlight. Light intensity is set on a light-by-light basis between 0 and 100 percent by using the slider control when each light is selected. One of the nice things about setting up light intensity and position is that response is immediate—there is no Apply button, and your object's light changes as you make changes in the control window.

When you first open the Extrude Lighting control window, all lights are inactive. To activate a light, click one of the three Light Source buttons—the numbering is for your reference; it's just a label. There is nothing special about light 3 versus light 1, for example, in any of its properties. Once you click a light button, a circle with the light's number inside appears in the front, upper-right position on a 3D grid surrounding a sphere, which represents the extrude object (see [Figure 16-7](#)). The lights themselves aren't visible on the drawing page, but the lighting effect you define displays highlights and shaded areas on your extrude object, particularly evident when the sides of the control object are curved. You can pose the light sources by adding them to the grid and then dragging them—there are over a dozen possible positions for lights; some of the positions can create very interesting “edge lighting” on your object.

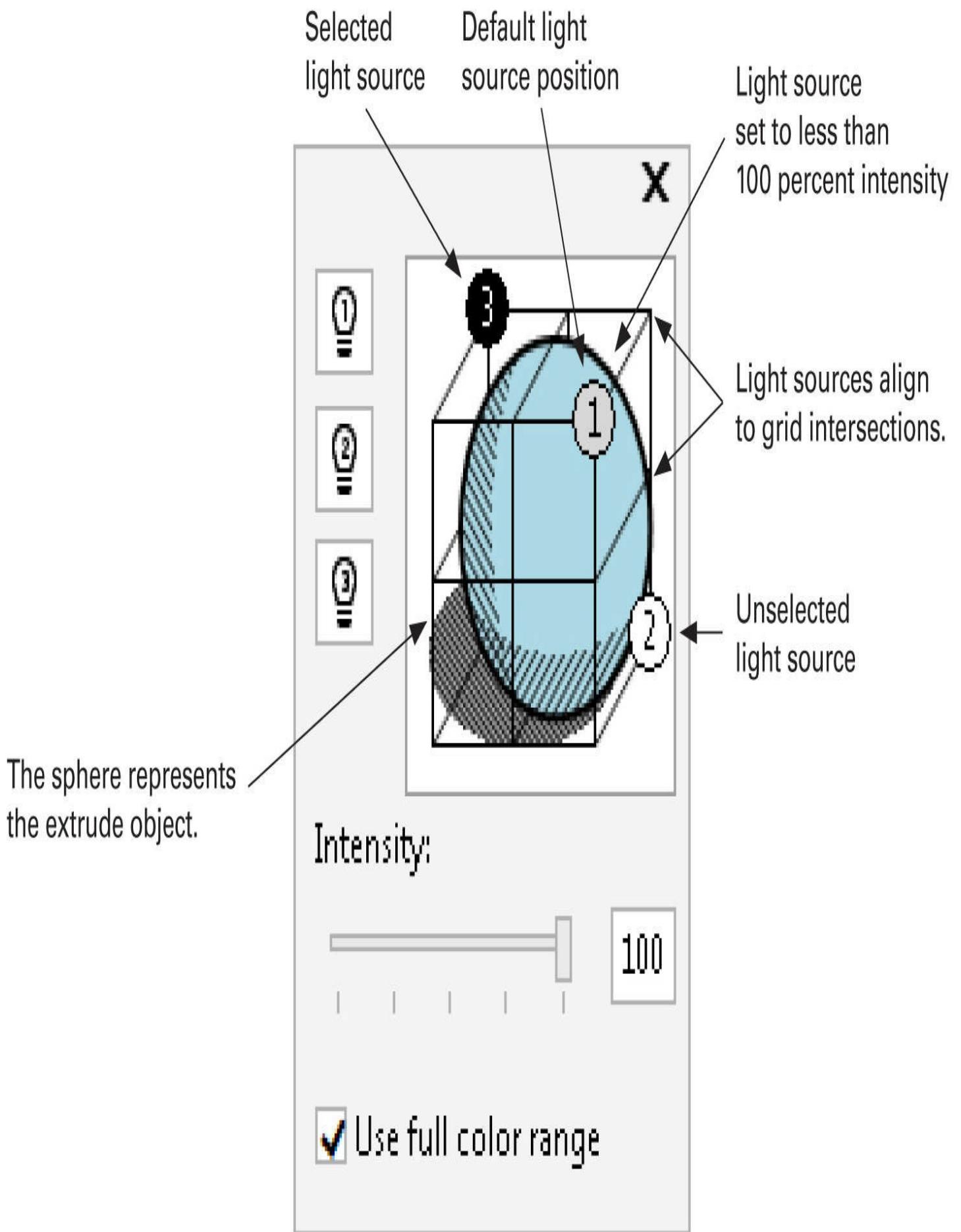


FIGURE 16-7 The 3D grid represents light positions relative to the selected extrude object.

Every time you activate a new light, it appears on the grid in the default position of front, top, right. This means if you click to activate two or three Light Source buttons in succession without first moving them, you'll stack them on top of each other and wind up with one extremely intense light source on the object. When this happens, drag the individual lights to reposition them at different points.

A *selected* light is shown as a black circle in the preview; unselected lights are shown as white circles. Lights set to brightness levels less than 100 percent appear in shades of gray. As these light sources are dragged around the 3D grid, they automatically snap to line-intersection points on the grid. You *can* position lights at the back-mid-center or back-center-bottom position—if you're *really* determined and have lots of time to spare—but lights in these positions will not contribute significantly to the shading of the extrude shape.



Note There is no option to set the color of lights; all lights cast white.

The following tutorial obliges you to put on your stagehand cap as you work the lights in a scene, adding them to the extrude object's properties and learning how to position them and turn the wattage up and down.

Working with Extrude Light Options

Tutorial

1. Create a color-filled object and apply an extrude effect to it.
2. Using the Extrude tool, click the Extrude Lighting selector on the Property Bar to open the light source option.
3. Click the Light Source 1 button, and a light source symbol appears in the upper-right-front corner of the grid, shown as a black circle numbered “1.” The Intensity slider is activated. Light Source 1 is now active, and the colors of your extrude effect are altered (brightened and possibly a little washed out) to reflect the new light's contribution to the extrude effect.
4. Drag the symbol representing Light Source 1 to a different position on the 3D grid; notice how the coloring of the effect changes in response to the new lighting position.

5. With Light Source 1 still selected, drag the Intensity slider to the left, approximately to the 50 percent position, and notice how the color of the object becomes darker and more saturated.
 6. Click the Light Source 2 button to activate it. Notice that it appears in the same default position as the first light source, and the symbol representing Light Source 1 is gray, indicating it is not selected and is not at 100 percent intensity. When an unselected light is at 100 percent intensity, the symbol is white. Drag Light Source 2 to a different grid position—in classic scene lighting, a secondary light of, say, 50 percent of the main light’s intensity is usually positioned directly opposite the main light to make objects look rounder, deeper, and more flattering with more visible detail than when using only one light source.
 7. Click the activation buttons for Light Sources 1 and 2 to toggle them off, and the color of the extrude object returns to its original state. To finish editing lights, click anywhere outside the Extrude Lighting selector.
-



Tip Occasionally in your design work, you might like the perspective you’ve created for the face of an extrude object, but you might not need the extruded side or the extrude group of objects. You can remove an extrude effect from an object and keep its perspective and position on the page by clicking the extruded portion of the effect and choosing Effects | Clear Extrude. You can also use the Extrude tool by clicking the Clear Extrude button on the Property Bar.

Controlling Light Properties

Two additional options are available when you use lighting, and they have the following effects on your extruded objects:

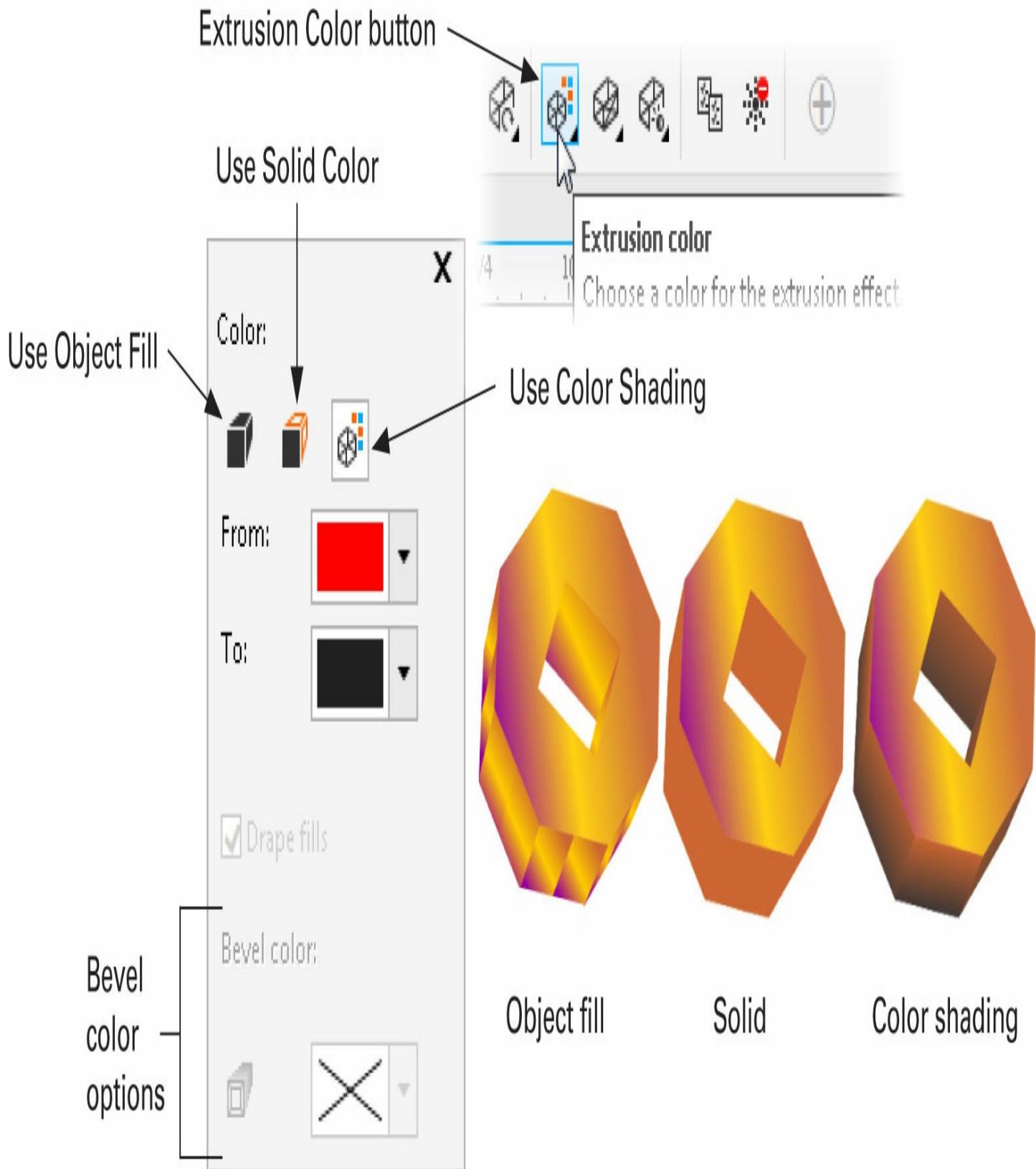
- **Lighting intensity** As mentioned in the previous tutorial, the Intensity slider determines the brightness of each light. When a light is selected, you can set the range between 0 and 100 percent; higher values mean brighter lighting.
- **Full color range** Below the Intensity slider, you’ll find the Use Full Color Range option, which directs your display to use the full *gamut* of colors when coloring the surfaces of your original object and its extruded portion. *Gamut* is the expressible range of colors available to CorelDRAW, which depends on the color mode of the original object and the extrusion. When working in CMYK process or RGB color, you might find the shading on an object to have too much contrast; the lighting might look too harsh and might create washed-out surfaces. The remedy is to uncheck Use Full Color Range; the gamut of colors is then limited, and the dynamic range of available

colors becomes narrower. You just might wind up seeing areas that are hidden in deeply shaded zones when Use Full Color Range is not checked.

Setting the Extrude Color

In addition to shading an extrude group using lighting, you can further embellish and draw out photorealistic qualities by using color options for the extrude. You might need to perform some technical illustration with extrude objects, and you might need cross-hatching in addition to lighting, for example. In these situations, turn to the Color option on the Property Bar; you can shade an extrude group in three different ways: object fill color, solid color, and color shading (much like a fountain fill transition from one color to a different color).

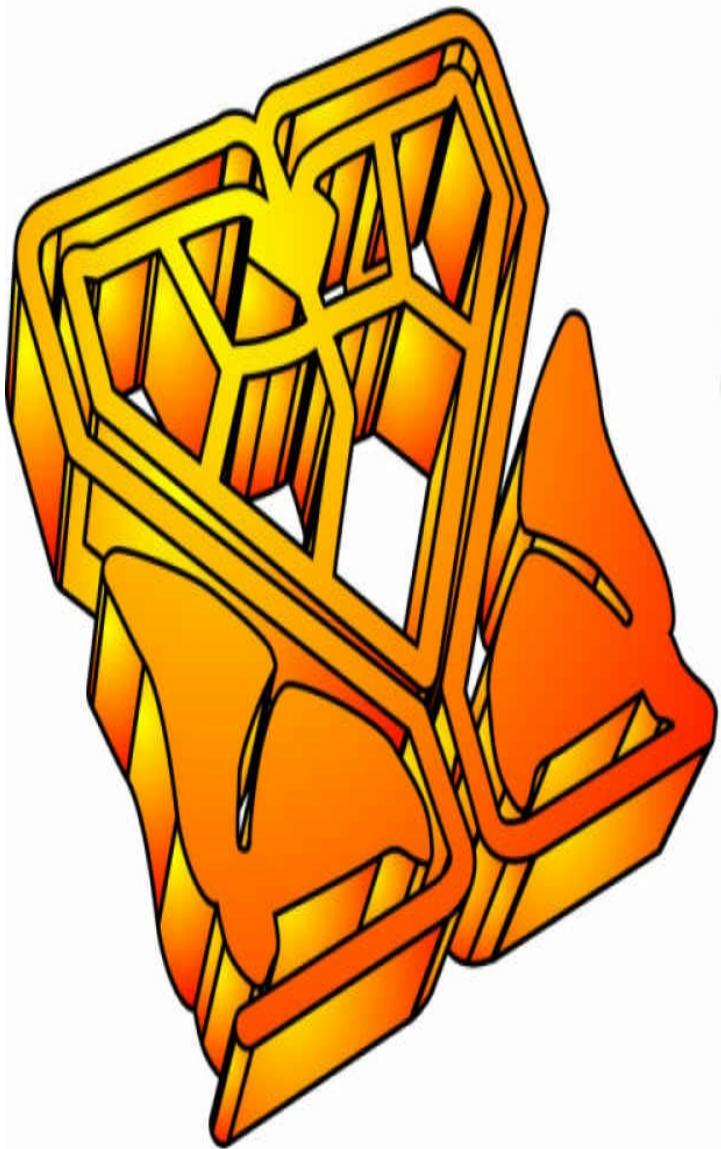
Going from left to right on the Color Control window, you'll see the color modes you can use.



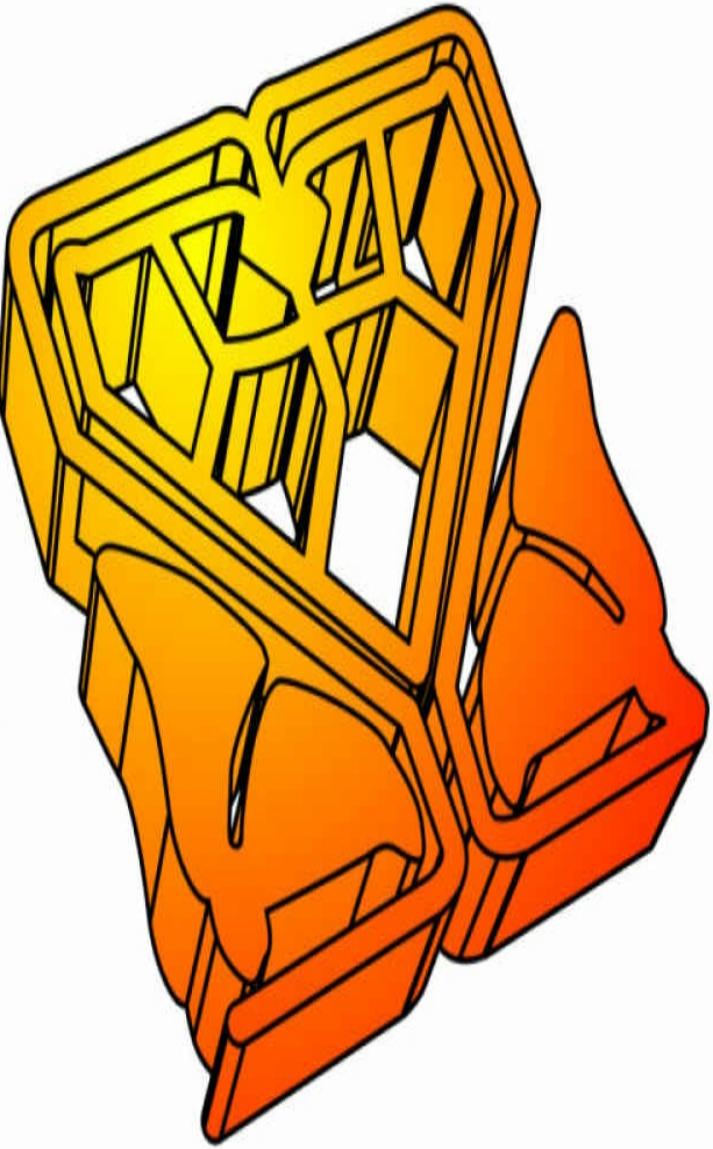
You can achieve effects that range from flat, technical illustrations to highly polished metallic surfaces—which actually can work on their own without your needing to light the object. It all depends on the choices you make in the Color Control window:

- **Using an object's fill** The Use Object Fill option is the most straightforward to use,

but it does not automatically create any sort of shading—if you choose to use the default object fill and the object is filled with a uniform color, give the control object an outline width whose color contrasts with the object fill color. When Use Object Fill is selected, the Drape Fills option also becomes available (and is selected automatically). Drape Fills is discussed shortly; here is an example of a fountain fill control object, with and without Drape Fills.



Radial fountain fill control object,
Use Object Fill



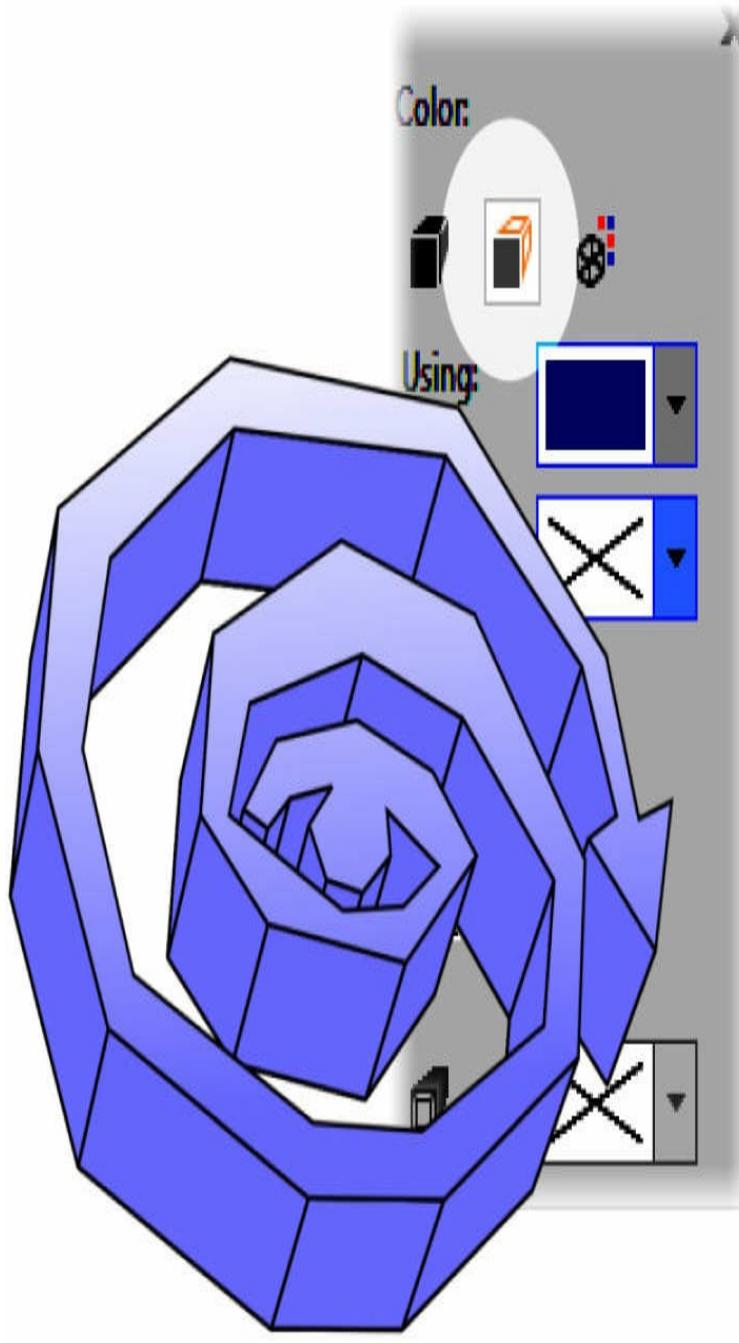
Radial fountain fill control object,
Use Object Fill, Drape Fills

- **Choosing your own solid fill** Choose Use Solid Color to set any uniform color to the extrude portion of your effect, regardless of the fill type currently applied to your object. The secondary color option becomes available only when Use Color Shading is selected.

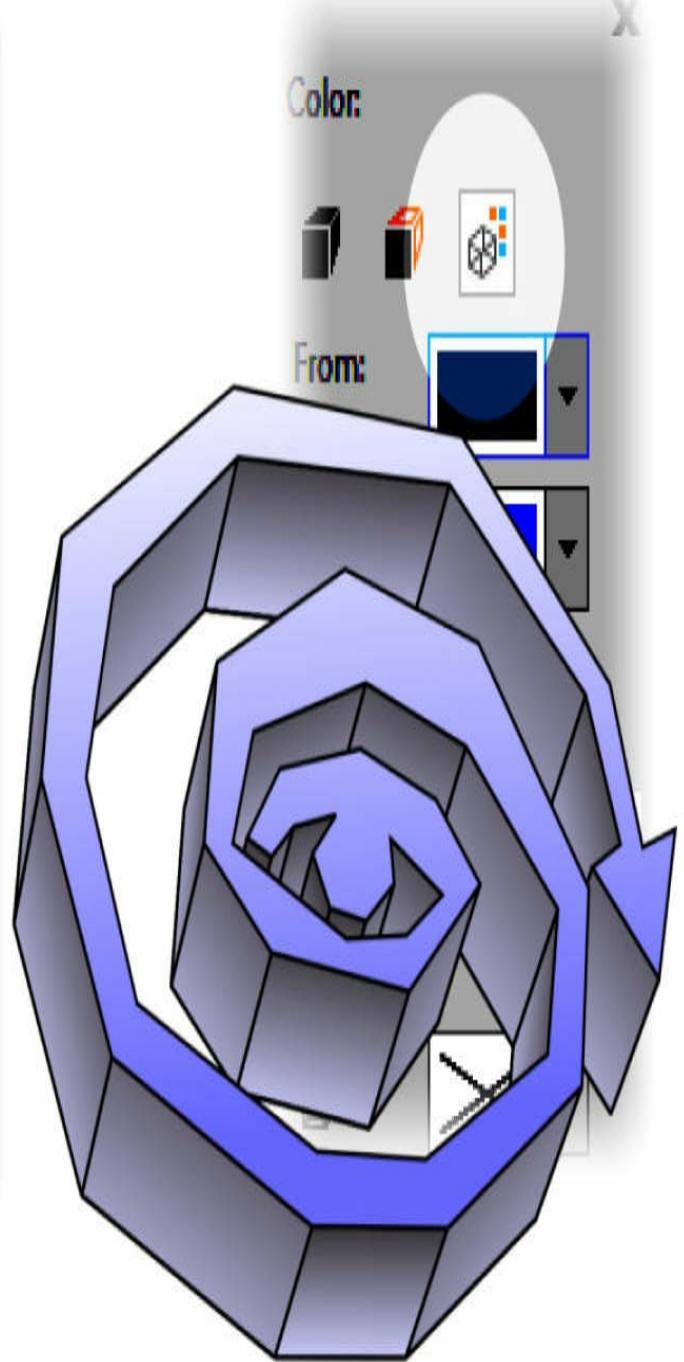


Tip If an object has no outline width/color applied, you might have difficulty seeing the edges between the original and extruded portions. Applying an outline to your original object might help define the edges of the overall composition.

- **Using color shading** Choose Use Color Shading to add depth by using your object's color as the Start color and black (by default) as the End color. Creating visual separation between the extrude group objects and the suggestion of depth is easy with Use Color Shading.



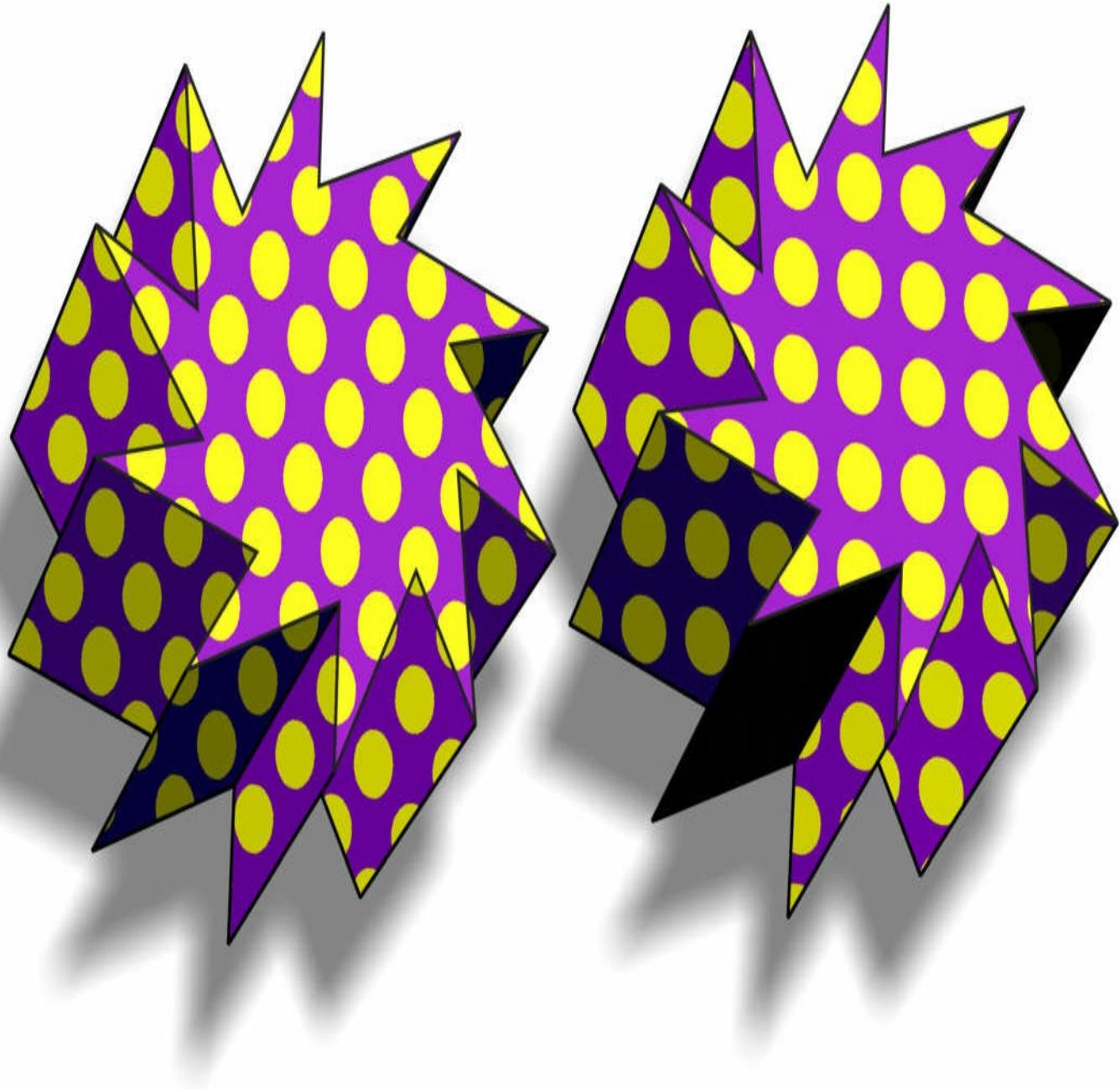
Extrude color applied with
the Use Solid Color option



Extrude color applied with the
Use Color Shading option

- **Draping your object's fill over the extrude effect** *Draping*, as used in CorelDRAW's extrude effect, means "treat each extrude group object's fill as a unique item." Say, for example, you have a patterned piece of cloth, and you drape it over a coffee table: you will see discontinuity in the pattern as each angle of the folds of cloth travels in a different direction in 3D space. Similarly, draping creates discontinuity in a

pattern and fountain fill that you apply to both the control object and the extrude group of objects, as shown in [Figure 16-8](#). On the right, with Drape Fills enabled, the polka-dot shape (with some lighting applied) truly looks dimensional, even though the two-color bitmap fill doesn't change perspective (bitmap fills do not take on the rotation angle of extrude objects; they always face forward). On the left, with Drape Fills turned off, the pattern proceeds across the object and the extrude group of objects in a continuous pattern, as though it's *projected* onto the surface of the shape instead of *being* the surface of the shape.



Without Drape Fills. Pattern is continuous (looks hokey).

With Drape Fills. Pattern is discontinuous (looks realistic).

FIGURE 16-8 The Drape Fills options can make or break the realism you're trying to illustrate.

- **Using bevel color** The Bevel Color option becomes available only if you've applied the bevel effect to an extruded shape. Bevel options are located on the Bevels selector on the Property Bar (covered in the next section). This option can be used to give the bevel and the front face of an object the same color, while the extrude shapes retain the

original type of fills you specified.

Using the Extrude Docker

If you're a longtime CorelDRAW user, you may have grown accustomed to applying extrude effects using a docker; new users will probably find the interactive editing methods and the options on the Property Bar more convenient to access, but the Extrude docker is available via Window | Dockers | Effects | Extrude. The Extrude docker is organized into five areas: Camera (referring to shape), Rotation, Light, Color, and Bevel.

Although these options are organized differently from the Property Bar, the same options are there. Using the docker method for extruding objects lets you choose extrude settings before applying them.

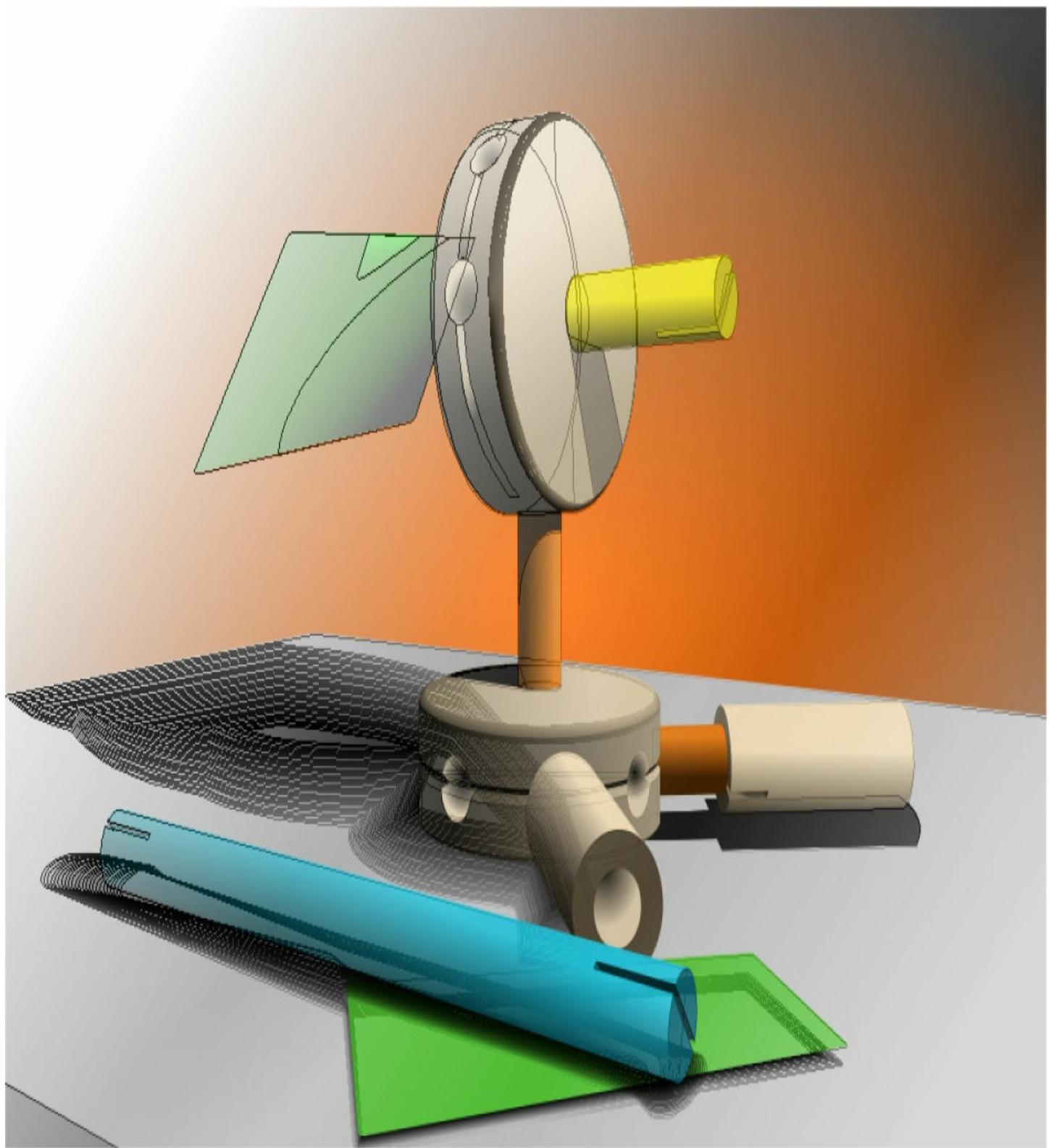
Assembly Instructions for a Kid's Toy

Now that you've participated in some tutorials, you've learned everything there is to be learned about CorelDRAW extrudes! Okay, this is a bit of an exaggeration, but not by much. It's time, then, to go over the top with a brief, very ambitious survey of what it takes to reproduce the following composition, expressed here as a model rendered in a 3D program.



This is about as photorealistic as you can get, but with a little guidance and a dollop of patience, you can draw something this intricate and dimensional. In the following illustration, I've created a composite view—both Wireframe and Enhanced views—of a drawing that my friend Rik Datta created at my request, using the previous illustration as a

reference.



The following is not a group of formal steps as you're used to performing in this *Official Guide*. Instead, I provide some insights on how to reproduce this simple construction kit assembly. Let some of the processes serve as solutions in your own work, and *don't* feel pressured to complete the design.

Tinkering Around.cdr and a Beginning Point

Open the Tinkering Around.cdr file. In it, you'll find a disk and a tube shape; both objects have other objects overlaid to complete a visual effect. First, to create the disk with the hole in the center and an inside bevel halfway along its depth, you want to draw a circle. Hold CTRL while you drag with the Ellipse tool.

Before you begin, make sure that each new extruded shape you create has the Shared Vanishing Point setting applied. You set up your first piece, and then use this button—and its targeting arrow—for each new piece, in order to make sure all objects in the scene are in the same perspective.

Comparing the circle to Rik's drawing, you want to create a linear-style fountain fill, traveling from a light beige to suggest wood beginning at about 11 o'clock, to a slightly darker beige ending at about four o'clock. Doing this also helps out with the lighting of the object, creating lighting fall-off where the extrusion lights might not create this effect.

You could certainly create a smaller circle in the center of the larger one and use the Trim operation, but the inside of the disk will not be self-shaded, as the Extrude feature does not produce shadows. Instead, create the small circle and then use the Circular-style fountain fill, ranging from a deep brown beginning at about 4 o'clock to a lighter beige ending at about 11 o'clock. Drawing plays an important part of completing a 3D design. Do not rely solely on the Extrude tool, unless perhaps you're extruding text for a headline.

Perform an extrude on the circle; then, using the 3D interactive markers, rotate the piece so that its top faces right—use the completed disk in the Tinkering Around.cdr file to get an idea of the best depth (about half what you'd anticipate) and angle of the disk.

Add a small bevel using the Extrusion Bevels button on the Property Bar. Use the Extrusion lighting panel to put a primary light in the upper right of the interactive lighting area, and then add a second light in the opposite direction; make the Intensity setting of this light about 44 so that it adds some detail in shaded areas without bleaching out your extruded shape.

Duplicate the disk using the “drop-a-copy” technique and then move the duplicate to the right so it overlaps most of the original object. This way, you've created the inner bevel in Rik's drawing by using the bevel of the original object. Clever, huh?

The tubular piece at the bottom of this file can be positioned within the composition and created in a general sense (it will need a little refining) by first creating a smaller circle than the first one and then filling it with the same linear fountain fill as the first one—you can use the Attributes Eyedropper to pick up the fill from the first circle.

Then, with the Extrude tool, just drag on the face of the circle to produce an extrusion that is in no way appropriate for reproducing this object! Next, use the Copy Extrusion properties button on the Property Bar to click the extruded side of either of the disk pieces. Presto, the long piece is perfectly lined up in 3D with the disk, and the Copy Extrusion properties also include lighting properties.

You finish this second piece by extruding the circle a little deeper (longer) and adding a

handcrafted hole to the end, exactly as you did with the disk object.

Concluding Touches to the Construction

To create a long piece that is angled 90° to support the disks, you can certainly copy the second piece, recolor it, scale the circle, and extend the extrude. You can just use the Rotate/Skew feature in CorelDRAW to change its angle from 0° to 90°. Now, because these pieces all have perspective (a vanishing point), you might not get where you want to go with this or your own composition, not precisely by rotating a piece. You can remedy this by selecting an extruded object, choosing VP Locked To Object, and then manually rotating the object in 3D space. For precision, it's recommended to use the Extrusion Rotation values box and numerical axis entry, because values entered give you immediate feedback on the page—the controls are totally live and interactive.

Any other piece you choose to pursue will probably require inheriting a rotation angle, a shared vanishing point, or both. Remember, for rotations of equal amounts, use the Copy Extrusion From feature on the Property Bar. No kidding, this is an ambitious piece, but certainly if you complete it, it's worthy of an art show award.

The green paddles in the composition can be created using the Perspective feature explained earlier in this chapter. They do not need extruding because in real life they're cardboard thin, but you'll want to use a Linear fountain fill from light to darker green, to suggest the same lighting in the scene as the other pieces.

[Figure 16-9](#) is the author's idea of a panoramic, international-style instruction booklet like those that come with knock-down furniture from Swedish stores.

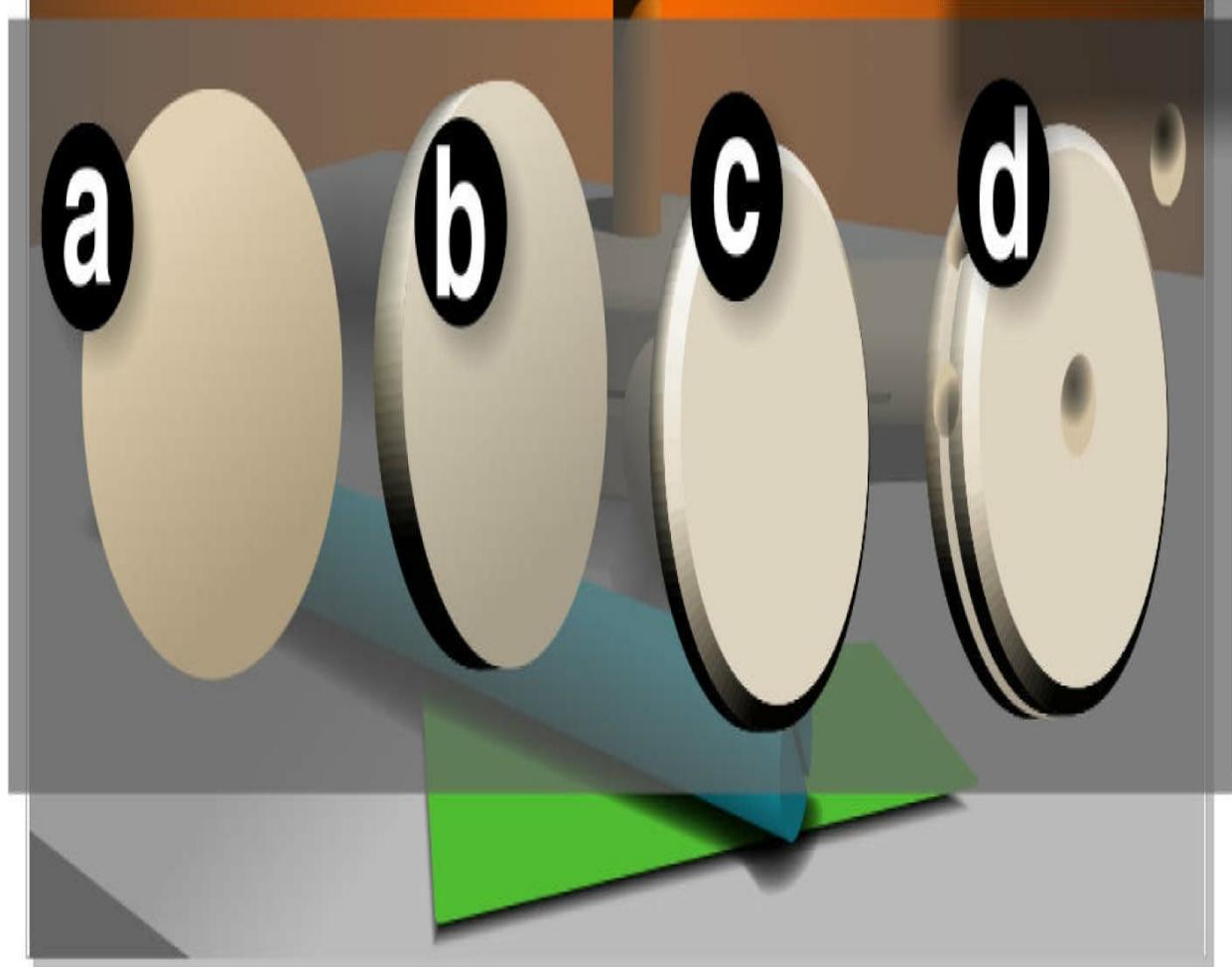
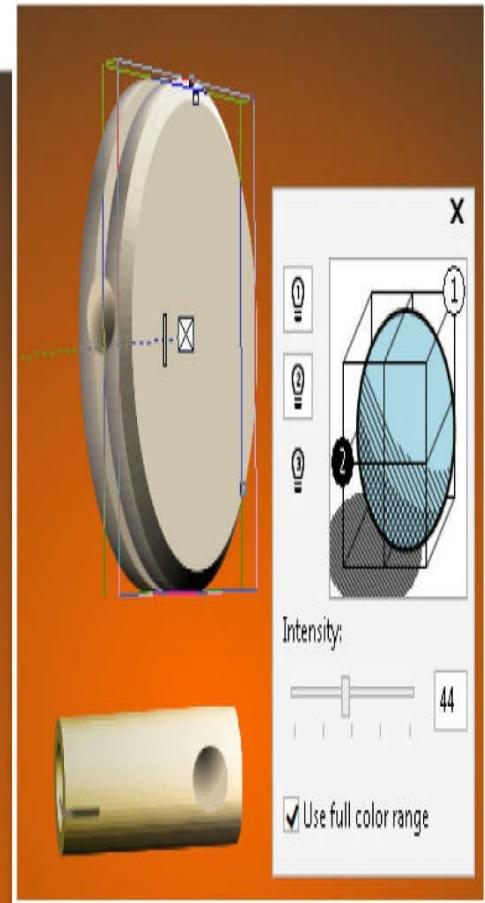


FIGURE 16-9 Extruded objects in combination with those you draw can lend a scene depth that otherwise is hard to draw.

Cleaning Up After Assembling an Extrude Composition

The Extrude feature in CorelDRAW can be an indispensable timesaver when you want to print a quick, astounding drawing. However, the sheer number of individual objects that make up an extrude shape, especially when lighting is applied, can be staggering and unwieldy to work with.

Is there a simple solution to reducing the number of objects CorelDRAW produces? No. Is there a way that requires effort but basically assures you of the objects you need, and is a great way to practice tracing? Oh, yeah....

The following illustration shows a process you can adopt that re-creates a surfeit of individual flat shaded object with one object that has a fountain fill. The Extrude feature does not use fountain fills in its calculations, but *you* can.

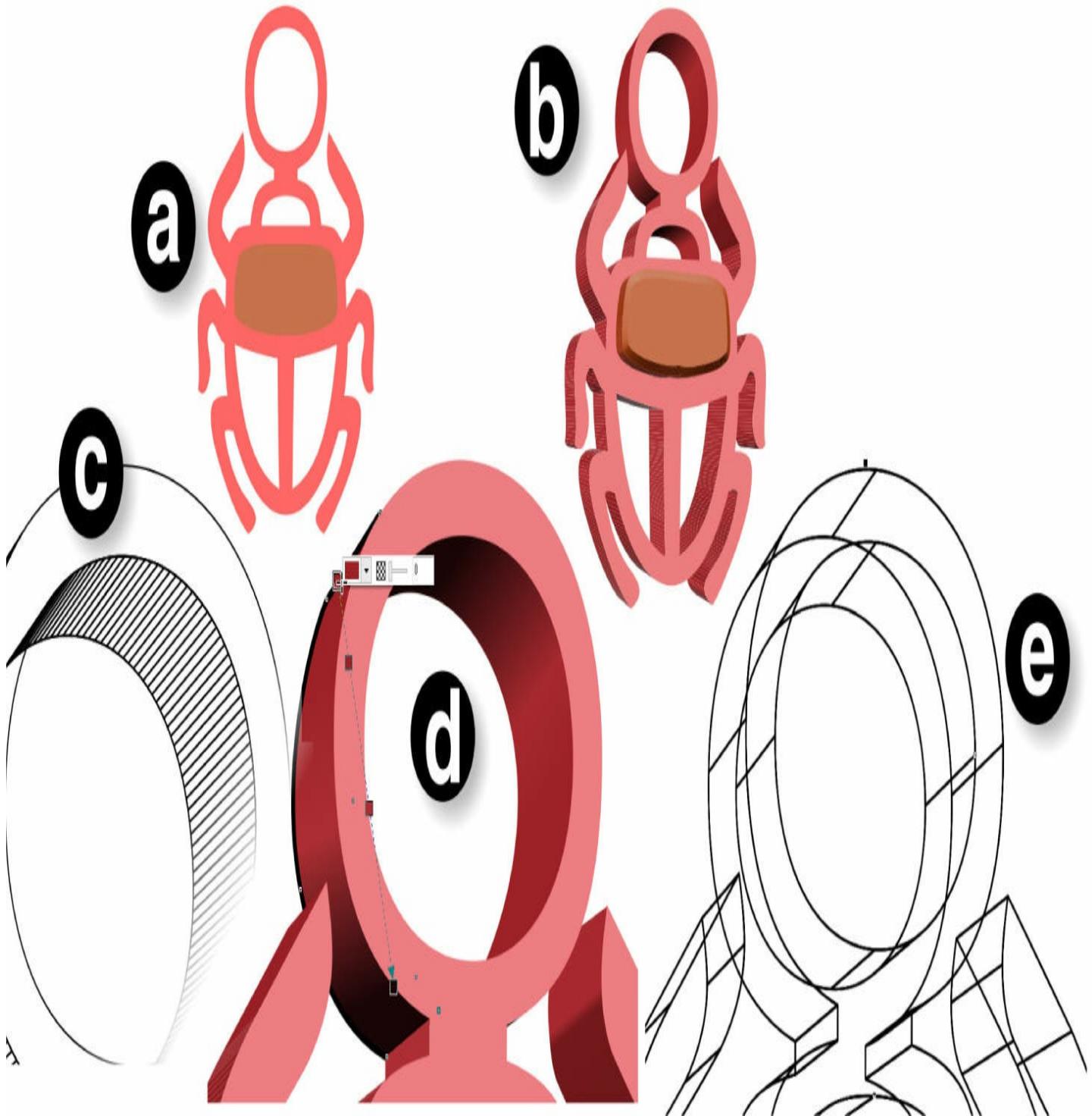
Incidentally, the Tinkering Around.cdr file in the .zip archive is Rik's drawing. You'll see some blends, but the extruded shapes have all been replaced using the technique outlined next.

Callout A in this illustration shows two pieces: a scarab beetle shape and a second shape on top depicting the beetle's shell. Callout B shows the beetle and its shell; they were lined up by first using the Copy Extrusion From features, and then the shell was recolored and a bevel applied.

Callout C shows a Wireframe view, a close-up of a part of the extruded beetle, after the Object | Convert to Curves command (CTRL-Q, memorize this one!) has been made. Oh, darn; this beetle consists of over 1,700 individual objects—much more than an actual VW Beetle. You do *not* want to work with this many shapes; the result if you had three or four of these prolific things on a page would be a slowdown in processing and your creativity.

Callout D shows the Pen tool in action, tracing under the front piece of the extrude on a layer I've created under the extruded bug layer. Once a suitable replacement is created for dozens of shapes that represent a single fountain fill, you can delete the original shapes.

As you can see in Callout E, a radical reduction in shapes has been made for the beetle. It's no longer editable as a 3D shape, but if you're done editing a complex extruded shape, you now have the luxury of duplicating twice (or a hundred times) on the page, creating an infestation in this example, and the speed at which you create and edit will be practically unnoticeable.



Note The Beetles.cdr file in the .zip archive contains a broken-down copy of the extruded beetle, plus a live copy of the original extruded shapes, in case you'd like to rotate the beetle or otherwise edit it before breaking up the extrusion. Have fun with some tracing practice and making both your life and the beetle simpler.

Extruding shapes is something many artists who compete with you for jobs might not be able to offer, especially if they don't own CorelDRAW! However, it's probably not a career-enhancer to use the extrude effect (or any other effect) as a substitute for your own talent as a designer. Use the Extrude feature with good judgment. Use it when you're in a design rut and need that certain something to perk up a piece. But don't let yourself get branded as the Extrude King or Queen (it even *sounds* rude!).

[Chapter 17](#) continues the *Official Guide*'s Effects Extravaganza, with envelopes, lens effects, and additional fun stuff. Learn to take an object or group of objects from being close to what you want to draw to *exactly* what you want. Just rotate this page 180° counterclockwise along your local X axis.

17 Using the Envelope Tool, Lens Effects, and Bevels

When you feel a design needs an element of realism—or even surrealism—to add attention, complexity, or that “certain something” that makes a shining piece absolutely brilliant, you turn to some of the effects CorelDRAW offers. Specifically, you need the ones not covered yet in this book—and more specifically, you need effects that can add lighting to an object, bend it, twist it, and, in general, modify it as though you are sculpting and not drawing.

This chapter reveals the inner workings of the envelope effect—probably the most advanced effect of its kind in any drawing program—and the Lens Effects docker, which provides some pretty wild variations on your artwork by overlaying it with a lens object. To round out this chapter’s collection of neat embellishments, you’ll also get hands-on experience with creating beveled objects; you can create anything from an emboss to a 3D starfish shape. These effects are easy to use and apply—the only hard part is deciding which *type* of effect works best in your illustration!



Note Download and extract all the files from the Chapter17.zip archive to follow the tutorials in this chapter.

What Does an Envelope Do?

You’ve probably seen this effect in stores a dozen times: for example, the words “Fresh Fish” shaped in the silhouette of a fish. In CorelDRAW, conforming objects to a different shape is done with the Envelope tool.

In CorelDRAW, you can start with a fresh envelope around an object, use presets, and copy a shape to use as an envelope of a different shape. Then, you edit the envelope until the shape suits your need. Envelopes are nondestructive; your original artwork can be restored at any time. The Property Bar includes a Clear Envelope button when an