

# **Specular Infini-D Tutorial Manual**

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Written and designed at:

Specular International  
479 West Street • Amherst, MA 01002  
(413) 253-3100

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# 1 Welcome

Welcome to the Infini-D tutorial project. The following lessons are designed to acquaint you with the basic workings of Infini-D 3.0. When you complete the tutorial project, you should have a good foundation for working with more complex 3D scenes and animations.

The tutorial lessons will take you through the basic steps needed to create a finished animation. These steps are: modeling, creating surfaces, composing a scene, lighting, animating, and rendering. While every artist works somewhat differently, the process you'll be led through in this tutorial reflects the techniques that many users of Infini-D have found to be the most effective.

Once you are comfortable with the concepts covered in the tutorial, it's best to open up Infini-D with the User Manual at your side (and maybe a pot of coffee), and just start doing it.

## **THE INFINI-D PHILOSOPHY**

Back in 1991, Specular's goal in creating Infini-D was to provide the most powerful, yet simple-to-use 3D software available. With Infini-D 3.0, Specular advances this philosophy by adding tools for professional users that are just as easy for beginners to learn and use. A powerful yet intuitive new spline-based modeler, expanded lighting controls, and first-rate motion control are just a few of the new features we've added to Infini-D 3.0.

## WORKING IN INFINI-D

After four years of use, Infini-D has become the chosen tool for thousands of professional and amateur animators. The countless animations we've seen over the years have given us some insight about how to best use the software, and we have chosen to structure the tutorial based on what users find most effective. The following are basic explanations of the steps you'll need to take to be able to Composing a Scene

Composing is when you place all of your finished objects into a scene, set up your hierarchical links, add lighting, and determine camera angles. It is often easiest to create individual objects and their surfaces as separate scene files, and then bring them together into a unified scene. This allows you to build objects quickly without the "clutter" of other objects. Infini-D's new Object Library allows you to quickly store your models and bring them into a new scene.

### Animating

Animation is the process of changing the attributes of your objects (including lights and cameras) over time. This can be as simple as having an object move from one place to another, or as complex as having that object rotate, change size, change surface and change shape all at once.

### Rendering

Rendering is the part of the process that the computer does. All of the information you told Infini-D — the shape, position, and surface of each object, lighting effects, and camera angles — needs to be calculated to create the final image.

## TUTORIAL OVERVIEW

For this tutorial you will be creating a commercial spot for an imaginary microbrew beer called "Amber Ale." This will take you from start to finish through the entire process of creating a finished animation. The following is a chapter-by-chapter overview of the tutorial.



## **Chapter 2 – Introduction to Infini-D**

This chapter covers the Infini-D interface, including the Toolbox and windows, the 3D world, and general conventions of Infini-D.

## **Chapter 3 – Creating 3D Text**

In this chapter, you will begin the project by creating 3D text objects, and applying surfaces to them.

## **Chapter 4 – Modeling a Bottle**

You will use the Lathe layout of the workshop in this chapter to create a beer bottle, and then you will import and apply a label onto the bottle.

## **Chapter 5 – Modeling a Bottle Cap**

You will use the Path Extrusion layout of the workshop to create a bottle cap, complete with “crimped” edges, and then you will import and apply a label to the bottle cap. You will also learn how to link the cap to the bottle. Finally, you will bring the Bottle and Cap assembly into the scene with the 3D text.

## **Chapter 6 – Lighting**

This chapter will provide an overview of the types of lights and lighting effects you can create in Infini-D. You will then use this information to add dynamic, animated lighting to your scene.

## **Chapter 7 – Animation Overview**

This chapter will cover the basics of animation, including how to use the Infini-D Sequencer.

## **Chapter 8 – Animating the Objects**

In this chapter you will animate the text and bottle.

## **Chapter 9 – Rendering the Final Animation**

All your hard work comes to fruition in this chapter as you render your final animation.

### **CONVENTIONS USED IN THIS MANUAL**

Before starting this tutorial, you should be familiar with Macintosh interface standards such as using files and folders, navigating through the standard Open File dialog box, using the mouse, and making selections from menus. You should also have installed and located the Infini-D Tutorial Folder from the Infini-D installer disks.

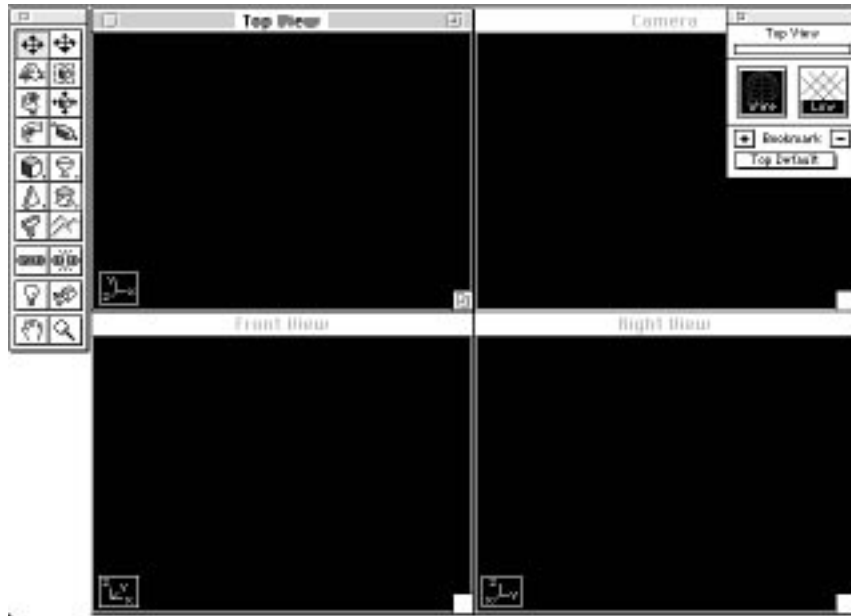
# 2 Introduction to Infini-D

This chapter will cover some basic information you'll need to know before you get started on the actual lesson.

## LAUNCHING INFINI-D

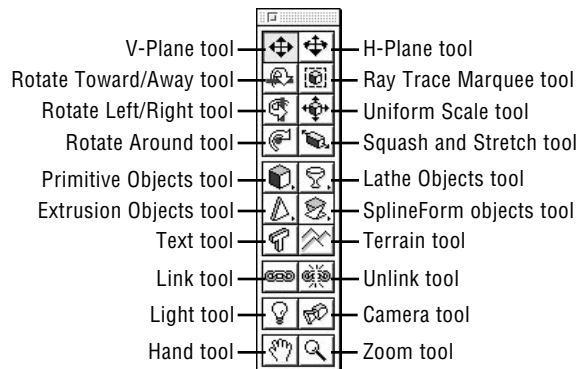


If you have not yet installed the Infini-D application on your hard disk, you will need to do that now. Please refer to the Infini-D User's Manual or the "Read Me" document on the Infini-D Install 1 diskette for installation instructions. Once installed, locate and double-click the Infini-D application icon to begin.



## THE TOOLBOX

The Toolbox is a floating palette that contains the basic tools for creating and manipulating objects in Infiniti-D. These tools allow you to create, move, resize, rotate and link objects, and to add lights and cameras to your scene. The Toolbox is located on the left side of your screen by default, but can be moved anywhere on the screen. What follows are basic descriptions of Infiniti-D's tools.



## **The V-Plane tool**

The V-Plane tool is used to select objects, and to move them parallel to the current view plane.

## **The H-Plane tool**

The H-Plane tool can also be used to select objects; it moves objects perpendicular to the current view plane.

## **The Rotate tools**

The Rotate tools allow you to rotate any object in any direction, and provide constraints for controlled rotation.

## **The Uniform Scale tool**

This tool allows you to change the scale of an object equally in all directions. To use the Uniform Scale tool, simply click and drag on an object to resize it.

## **The Squash and Stretch tool**

The Squash and Stretch tool allows you to change the scale of an object along an individual axis. To squash or stretch an object with this tool, click on the face of the object's bounding box to scale it in a direction perpendicular to that face.

## **Primitive objects tool**

This tool pops up to give you access to Infini-D's primitives. These include the cube, sphere, cylinder, cone, square, and infinite plane shapes. To choose a primitive object, click and hold on the Primitive objects tool; then move the mouse over to the desired object and release. Once a primitive object is selected, simply click in any view window to place it in your scene.

## **Lathe objects tool**

The Lathe tool creates lathe objects which can be customized with the workshop. This tool pops out to provide you with basic lathe variations.

## **Extrusion objects tool**

The Extrusion tool pops out to provide basic variations on extruded shapes, which can be modified in the workshop.

## **SplineForm objects tool**

The SplineForm tool contains several variations on more exotic freeform objects, such as spiraling, twisting, and tapering objects.

## **Text tool**

You can use the Text tool to create 3D text objects in your scene. Select the Text tool and click in any view window to open the Text Info dialog box, where you can enter the characters, choose fonts, and add bevels to your text.

## **Terrain tool**

This tool generates terrain objects, which are most useful for creating landscapes. Select the Terrain tool and click in any view window to create a default terrain. To edit the terrain, select it and choose Edit Terrain from the MODEL menu, or double-click it with the H- or V-Plane tool.

## **Link tool**

The Link tool allows you to create hierarchical models by linking objects together. To link one object to another, select it with the H- or V-Plane tool, then select the Link tool, and click on the object you wish to link to. The first object now becomes the “child” of the second “parent” object. (The exercises in Chapter 3 will take you through the basics of linking.)

## **Unlink tool**

The Unlink tool allows you to unlink a child object from its parent object. Select the Unlink tool and click on the child object to unlink it.

## **Light tool**

This tool allows you to place new lights in your world. The lights' individual settings can be adjusted using the Lighting Floater.

## **Camera tool**

Use this tool to place new camera objects in your scenes.

## **Hand tool**

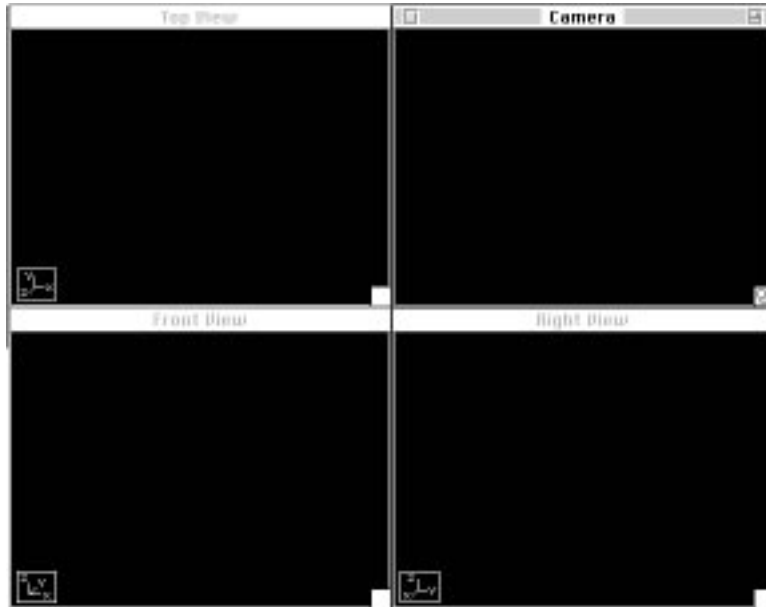
The Navigation tool is used to pan around in an individual view window, allowing you to view different parts of your scene without changing the zoom level. Simply click and drag in any view window (except a camera window) with the Hand tool to pan your viewing area.

## **Zoom tool**

The Zoom tool allows you to change the magnification level in any view window. To zoom in, simply click in any window, or click and drag to zoom into a particular area. To zoom out, hold down the OPTION key and click in any window.

# **VIEW WINDOWS AND THE 3D WORLD**

When you first open Infini-D, you will see four view windows which open by default. They are the top, front, right, and camera windows. These windows are where you will manipulate your objects in the 3D world (see next paragraph for explanation). To manipulate any object, select the proper tool from the Toolbox and click and drag on an object in the appropriate view window. Right, bottom and back views are available from the windows menu. Any combination of windows can be opened at any time to suit your needs.

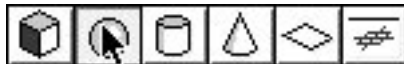


When working in Infini-D, you are actually working in a virtual 3D world. This world can best be described as a huge cube, like a fish tank, within which you place your objects, lights and cameras. The windows, like the sides of the fish tank, provide you with various views into this cube. The Camera view represents a particular viewpoint *within* the 3D world.

## CREATING AND MANIPULATING OBJECTS

The following exercise will help give you a basic feel for working with objects in Infini-D.

1. **Click and hold on the Primitives tool in the Toolbox.**  
This tool pops up to show you all the primitives available.



3. **Move your cursor into the Top view window and click.**  
A sphere appears in the view windows. (That's how simple it is to place objects in Infini-D!)



You'll notice that the sphere is surrounded by a blinking bounding box in the Top view window. This indicates that the object is currently selected.

Now you can use some of Infini-D's other tools to manipulate your sphere.

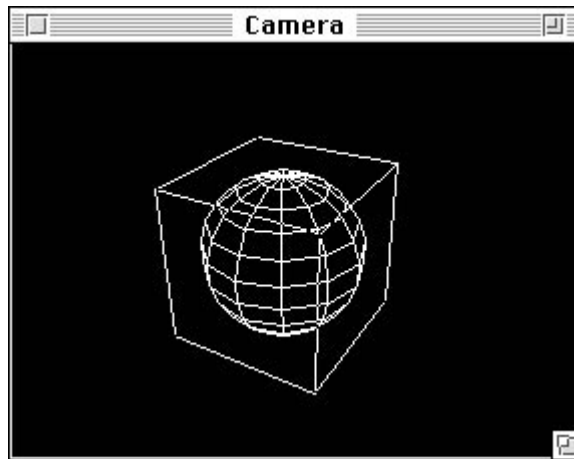
1. **Select the V-Plane tool in the Toolbox.**



2. **Place the cursor over the sphere, then click and drag.**

You'll see that the object moves along with your cursor, as long as you keep the mouse button depressed.

3. **Now release the mouse button and try using this movement in another view window.**



You'll notice that when you move your sphere, it is also moving in some of the other view windows. This is because the sphere is an object in your 3D world, and you're watching it move from various viewpoints at the same time. Experiment with moving the sphere and observe how it relates to the other views.

If, in the Top view window, you click and drag the sphere toward the top of the screen, you'll notice that you can see the sphere moving to the right in the Right view window — but in the Front view window it doesn't appear to be moving at all. This is because, in a view with no perspective, an object moving directly toward or away from you always appears to be the same size.

Next, we'll have you try adding another object to your scene, and using it to try some different manipulations.

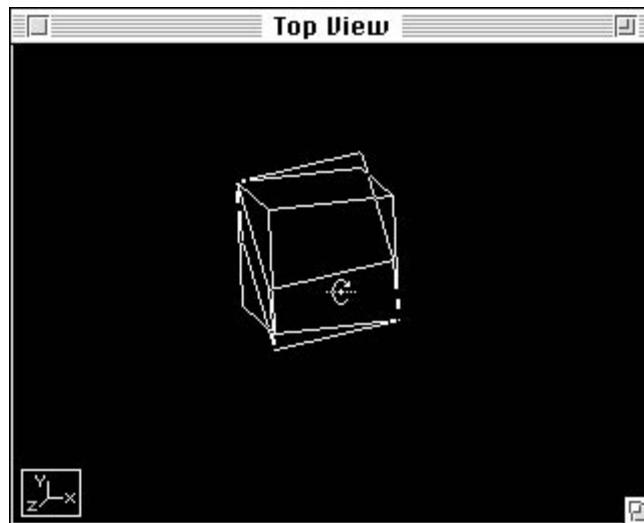
1. Again using the Primitive tool pop-up, click and drag to select the cube primitive.



2. Click in any view to place a cube in the world.
3. Select the Rotate Toward/Away tool (Top Rotation tool) from the Toolbox.



4. In the Top view window, click and drag on the cube to rotate it.  
Notice how it rotates around its center point, which is indicated by a small cross-hair at the center of the object.



5. After you've released the cube, select Undo from the EDIT menu to reset the cube to its original position.
6. Make the Camera view window active.
7. With the same Rotation tool still selected, hold down the SHIFT key and click and drag on any face of the cube.  
The object's rotation has now been constrained so that it only rotates around the axis perpendicular to the face clicked on. Try this again while selecting a different face of the cube.

When you use the SHIFT key to constrain the rotation of an object that is not a perfect cube, you must refer to the bounding box that surrounds the object. The axis of rotation is determined by which face of the object's bounding box you click on.

Now you can try scaling your cube.

1. **Select the Uniform Scale tool from the Toolbox.**



2. **In the Camera view, select your cube (if it's not already selected).**

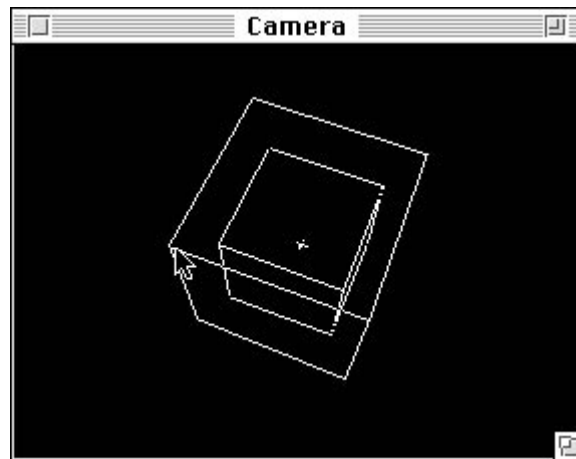
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*You can select any object with any of the object manipulation tools by simply clicking once on the object.*

---

3. **Click and drag on the cube.**

You'll notice the bounding box expanding and retracting as you move the mouse back and forth. Release the mouse when you reach a size you like.



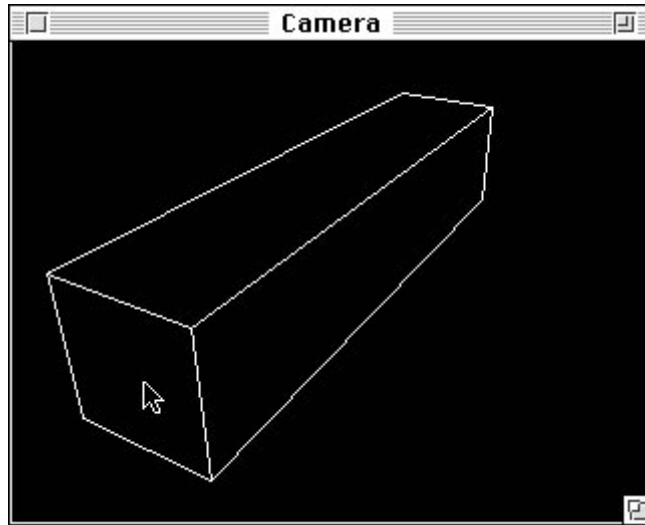
Finally, you should try out the Squash and Stretch tool.

1. **Select the Stretch tool from the Toolbox.**



2. **In the Camera view, click and drag on any face of the cube.**

The cube is now “stretched” or “squashed” along the axis perpendicular to the face selected. You can try doing this again on any other face of the cube.



That’s the basic overview for creating and manipulating objects in Infini-D. Creating new objects is as simple as selecting the proper tool and clicking in any view window — even the Camera window. Each successive chapter of the tutorial will introduce you to more tools and functions. Please refer to the Infini-D User’s Manual for complete descriptions of all tools.

# 3 Creating 3D Text

In creating the animation for Amber Ale, you'll start by creating 3D text objects for the words "Big Bold Brew." You'll also be applying surfaces to the text objects and learning how to edit those surfaces.

Start by launching Infini-D. A new scene will open automatically.

---

*If you are using a Power Macintosh, your computer is fast enough for you to work in a fast-shaded Camera view instead of wireframe. Click on the Camera view to make it active; then choose Views Floater from the WINDOWS menu. In the palette that opens, click and hold on the icon that says "Wire," and choose "Fast" from the pop-up menu. Rendering and views will be fully explained later in this chapter.*

---

## SIZING THE CAMERA VIEW WINDOW

The first thing that you should always do when starting a new animation is decide what size your final output should be and set your camera window to be the same aspect ratio. Nothing is worse than spending hours preparing an animation, only to find out you need to resize the Camera window, which can change the framing of your scene. To prevent this from happening:

1. Make the Camera view window active.
2. Choose Window Options from the WINDOWS menu.



Set the window size to a 4:3 aspect ratio.

3. If you are working on a 13" or 14" monitor, set the width to 280 and the height to 210.

If you are working on a 17" or larger monitor, click and hold on the Window Size pop-up, and choose 320x240 from the list.

---

*Both 280 x 210 and 320 x 240 are proportionate to 640x480, the size of both a standard 13" or 14" monitor, and the standard size for animations that will be put to video tape.*

---

## CREATING THE 3D TEXT

The next step you'll take in putting together your Amber Ale scene will be creating some 3D text:

1. Select the Text tool from the Toolbox, and click in the Front view window. The Text dialog will appear.

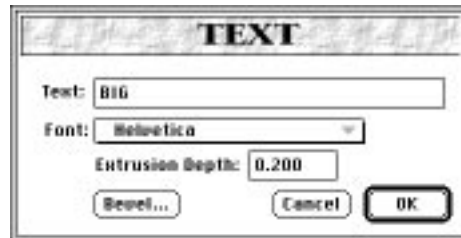


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*It may take several seconds for the Text dialog to appear if you have a large number of fonts in your system folder.*

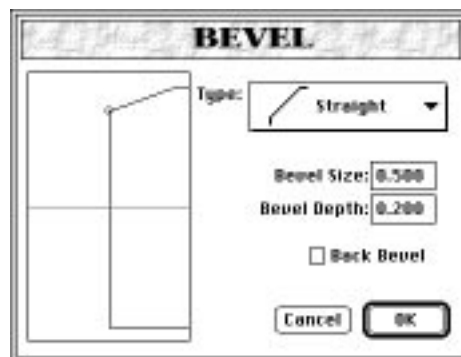
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2. In the text box, type the word "BIG," using all capital letters.



Use the Text tool and Text dialog box to create your 3D text.

3. From the Font pop-up menu, choose Helvetica for your text.
4. Leave the Extrusion Depth at 0.200.
5. Click on the Bevel button; then click and hold on the Bevel Type pop-up menu. Choose the Straight bevel type.



Add a bevel to the 3D text in the Bevel dialog box.

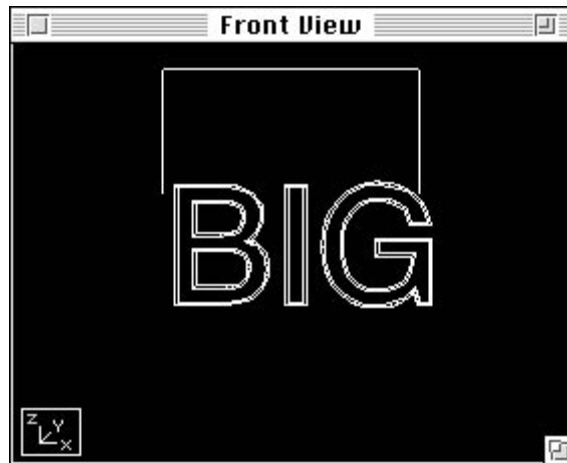
6. Uncheck the box next to Back Bevel.

In this animation, we will not see the back of the text objects. By unchecking Back Bevel, you're telling Infini-D not to add the bevel on the back of the object. This makes the object render faster, because it is less complex than if it were beveled all the way around.

7. **Leave the Bevel Size and Bevel Depth values at their default settings.**  
Click OK to exit the Bevel dialog, and then click OK again to create your text.

Now the 3D text will appear in the modeling window with the bevel you specified. Next, you'll move "BIG" to make room for the next text object.

8. **Select the V-Plane tool.**
9. **Click on the Front view window to make it active, if it is not already.**
10. **Click on the "BIG" text object and drag it upward, as shown.**



Drag the 'BIG' object up to the top of the Front view window.

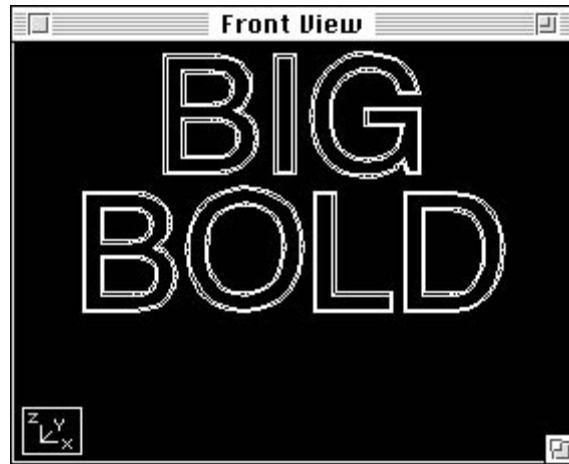
Now you'll make the word "BOLD," using the same steps as above:

1. **Select the Text tool from the Toolbox, and click in the Front view window.**
2. **In the text entry box, type the word "BOLD," again using all capital letters.**
3. **In the Font pop-up menu, choose Helvetica.**



4. Leave the Extrusion Depth at 0.200.
5. Click on the Bevel button, and again choose the Straight Bevel Type and uncheck Back Bevel.
6. Click OK to exit the Bevel dialog, and then click OK again to accept all your settings.
7. Use the V-Plane tool to move the “BOLD” object so that it sits just below the “BIG” object in the Front view.

The new 3D text should now appear in the modeling window, right below “BIG.”  
Now we can add the last text object, “BREW.”



1. Select the Text tool, and click in the Front view window.
2. Type the word “BREW,” again using all capital letters.
3. In the Font pop-up, choose Helvetica.
4. Leave the Extrusion Depth at 0.200.
5. Bevel your text just like the other two text objects, then click OK.

The final text object should now appear in the view windows — but we'll need to move "BREW" down, so that it is not sitting in the same space as "BOLD."

6. Select the V-Plane tool.

7. Click on the Front view window to make it active, if it is not already.

---

*Since you just created the "BREW" object, it should be flashing, indicating that it is selected. If you click on the title bar of a view window, that window will become active without de-selecting the currently selected object.*

---

8. Click on the "BREW" text object and drag it downward, as shown.



Position the text evenly in the window.

## SETTING THE CAMERA

For this animation you'll want the camera to point straight at the front of the text objects. In Infini-D, the camera can be treated like any other object, and can be moved, rotated, and animated.

Infini-D provides you with the ability to create, save and recall any camera or zoom position for any view. These saved views are called Bookmarks, and are accessed through the Views Floater. Infini-D also includes a large number of predefined Bookmarks. We'll start with one of the predefined bookmarks, then modify it and save it as a new Bookmark.

1. Choose Views Floater from the WINDOWS menu to bring up the Views Floater, if it is not already visible.
2. Make the Camera view active.
3. Click and hold on the Bookmark pop-up at the bottom of Views Floater, and choose Front Default from the Bookmark list.

Now your view should change, and the camera should be pointing directly at the text objects. If the objects appear too big or too small in the Camera view, use the following steps to adjust your view:

1. Select the Zoom tool, and then hold down the OPTION key (a minus sign should appear in the middle of the Zoom tool) and click in the Camera view window once.  
This cuts your camera's focal length in half, which should make all of the objects fit in the view; it works just like a zoom lens on a real camera.



Zoom out on the Camera view to see everything in the scene.

2. **With the Zoom tool still selected, click in the Camera view and drag out a Zoom area.**

(The Zoom tool always zooms from the center of the window when used in a Camera view.) When the Zoom rectangle encloses all of the objects (with a little space around the edges), release the mouse button.



Use the Zoom tool to make the text fit comfortably in the window.

Now your text objects should be nicely centered in the Camera view. Let's save this view as a Bookmark.

1. **In the Views Floater, click on the "+" button.**
2. **In the text box that appears, enter a name for your new view, such as "Main view," and click OK to save your new Bookmark.**

Your new view now appears in the Bookmark pop-up, and you can return to this view anytime you want by simply selecting it from the pop-up when the camera view is active.

Now is a good time to save your scene file. First, fine-tune the position of your text objects using the V-Plane tool, until you have them the way you want them. Next, choose Save from FILE menu, name the File "Amber Ale -Text Only," and click Save.

# RENDERING

To take a look at what your objects will look like in a finished animation, you need to render your scene. Infini-D has six choices for rendering: Bounding Box, Wireframe, Fast, Better, Best and Ray Tracing. While developing a 3D scene, you will want to do several renderings to make sure that things look the way you want them to. You can use Infini-D's different rendering types, depending on what you are looking for and how much time you have. A new scene is set to Wireframe rendering by default. Let's take a look at some of Infini-D's other types of rendering.

1. Since your final scene will be rendered using the Camera view, click in the title bar to make it the active window, if it is not already.
2. Choose Views Floater from the WINDOWS menu to open the Views Floater, if it is not already visible.



The Views Floater provides you with controls for the rendering quality and anti-aliasing settings for each of your windows. It also allows access to the Bookmarks, discussed earlier.

3. **Click and hold on the Rendering Quality pop-up in the Views Floater, and select Fast.**

You'll notice that the text now looks solid, and contains highlight and shadow areas.



- 4 **Click again on the Rendering Quality button and select Better.**

You'll find that, with this choice, the rendering looks better and the surfaces are smoother, but the rendering process takes a bit longer.

5. **Now, try selecting Best.**

Although you will only see slight differences between Better and Best right now, it will be more drastic when more detailed surfaces are applied to your objects later in the tutorial.

To smooth the edges of your objects when rendered, you must use *anti-aliasing*. The controls for anti-aliasing are also found in the Views Floater.

6. **Change the rendering back to Fast in the Views Floater.**

7. **Click and hold on the Anti-Aliasing pop-up in the Views Floater, and choose Low.**

You can see that the edges of your objects are much smoother when rendered with anti-aliasing. While the Low level of anti-aliasing often works just as fast — or faster — than “None,” take care when using medium and high anti-aliasing. Doing so can increase your rendering times.

## APPLYING SURFACES

While your 3D text objects now look much better than they did in wireframe, you'll notice that they still lack "pizzazz." Infini-D provides you with the tools to create an almost endless variety of surfaces for your objects, making them look much more dramatic and interesting. Before you start applying surfaces, make sure that rendering in the Views Floater is set to Fast, and anti-aliasing is set to None.

1. With the V-Plane tool, select the "BIG" text object.
2. Choose Apply Surface from the RENDER menu, and then select Blue Plastic from the texture list.

You can see that a flat blue texture has been applied to "BIG." You can also apply surfaces using the Surfaces Floater.

1. With the V-Plane tool, select the "BOLD" text object.
2. Choose Surface Floater from the WINDOWS menu.

The Surface Floater will now appear, in which the pop-up menu displays the surface assigned to the currently selected object. It should be showing you that "BOLD's" current surface is White Plastic, which is the default surface for any new object in Infini-D.

3. Click on the pop-up menu in the floater. Scroll down and select Red Plastic from the pop-up list.



Use the Surface Floater to change the surface to Red Plastic.

The Red Plastic texture should now be applied to "BOLD." Next, use one of the two methods shown to apply the Yellow Plastic surface to the "BREW" text object.

Well, you should now have a some very colorful text — but it's not quite what the Amber Ale client is looking for. Perhaps the client wants something a little flashier — like text with a shiny chrome surface. To simulate chrome, you'll use Infini-D's default 'Mirror' surface.



Use the Surface Floater to change the surface to Red Plastic.

1. Using any of the above methods, apply the Mirror surface to all three text objects.

If you are still looking at your Camera view window in Fast shading mode, you should now notice that you have three very dark, almost black, text objects. This is because mirror is a highly reflective surface, but there is nothing in your scene to be reflected.

## ENVIRONMENT MAPS

Infini-D provides you with the ability to wrap a picture around your entire 3D world, creating a simulation of a surrounding environment. This is called an Environment Map, and it makes reflective objects look great. The Environment Map can be a picture of anything, as long as it is saved in either the PICT, PICS, or QuickTime file format. (PICS files and QuickTime movies can be used to create an animated environment map that changes over time.) First you'll bring in a PICT file, and then you'll designate it as the Environment Map.



1. Choose Environment from the RENDER menu.
2. Click on the Get Image button at the bottom of the Environment dialog, and navigate the Open dialog until you locate the “Chrome Environment” file in the Infini-D tutorial folder.  
(The tutorial folder should have been installed with the program. If you can not locate it, use the Infini-D installer disks to install the tutorial folder onto your hard drive.)



Use the Chrome Environment image as an environment map in your scene to simulate reflections.

3. Select it and click OPEN. Then click OK in the Get Image dialog.
4. Click the check box next to Environment to turn on environment mapping, and then choose Chrome Environment at the bottom of the pop-up menu.  
You'll see a preview at the left side of the dialog box.
5. Click OK to accept your new Environment Map.



Turn on the Environment map in the Environment dialog box.

---

*Imported PICT files always appear at the bottom of any surface pop-up list, below the list of Infini-D's built-in procedural surfaces.*

---

Now you've got some nice-looking surfaces, and the bevels should look particularly cool. To see an even better rendering of your text, choose Best from the Views Floater.



Turn on the Environment map in the Environment dialog box.

Once you've finished this part of the tutorial, you may want to try removing the bevels from the text objects, just to see how much difference they make when trying to create slick-looking 3D text. Then, bring your bevels back, and save your file before moving on.

## EDITING SURFACES

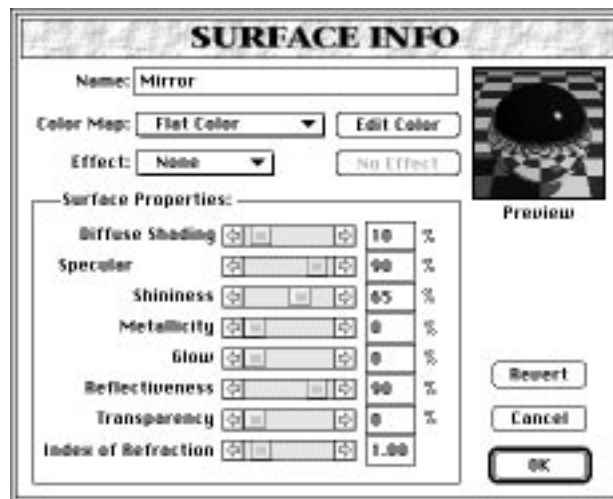
Now suppose the client likes the chrome look of the text, but wants it to have a little more color and maybe a little texture. Infini-D's built in Surface Editor makes adding these a painless process.

1. Choose Surface Floater from the WINDOWS menu if the Surface Floater is not already visible.

Make sure that one of your text objects is chosen, and that the current surface is Mirror.



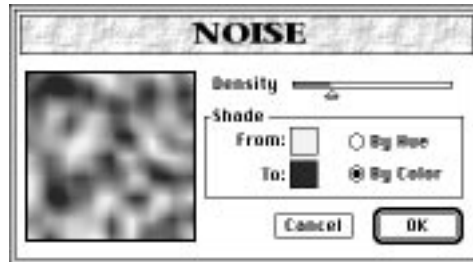
2. Click on the Edit button to bring up the Surface Information dialog box.



Use the Surface Information dialog box to add color and a noise pattern.

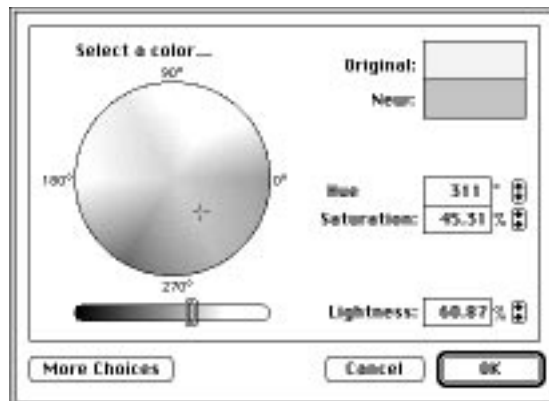
Now you can change the attributes of any Infini-D surface, or create new surfaces using Infini-D's built-in procedural textures. We'll give the Mirror surface a bit of color, and use a Noise pattern to make the surface more interesting.

3. In the Color Map pop-up at the top of the window, click and choose Noise.
4. Click on the Edit Noise button.



The Noise dialog box

5. Drag the Noise Density slider to the right until the number 50 appears.  
This will give your surface a slightly rough texture.
6. Click on the color square next to "From" to bring up the color picker and choose a light purple color.



The Apple color picker

7. Click on the color square next to "To" to again bring up the color picker; choose a medium-to-dark purple, and then click OK to exit the Noise Editor.

**8. In order to make the object's color more visible, we need to adjust the Diffuse Shading slider.**

Drag the slider, or enter numbers in the field next to it, until the setting is at or near 50. In the preview window you should now be seeing more of the object's color.

**9. Finally, rename your Surface "Purple Mirror" by typing in the Name box.**

**10. Click OK to accept the new surface.**

The changes that we made to the Mirror surface are global changes. That is, they affect all the objects in a scene to which the Mirror surface is assigned. From the Rendering pop-up, choose Shade Best to see a high-quality rendering of your newly-chromed text.

This is the end of Chapter 3. It is a good idea to save your scene again.



# 4 Modeling a Bottle

Choose New from the FILE menu to create a new scene file. It is often a good idea to create objects, or groups of objects, in separate scenes and bring them together later for animating. We'll create the bottle and bottle cap in separate scenes, then simply copy and paste them into the scene with the 3D text.

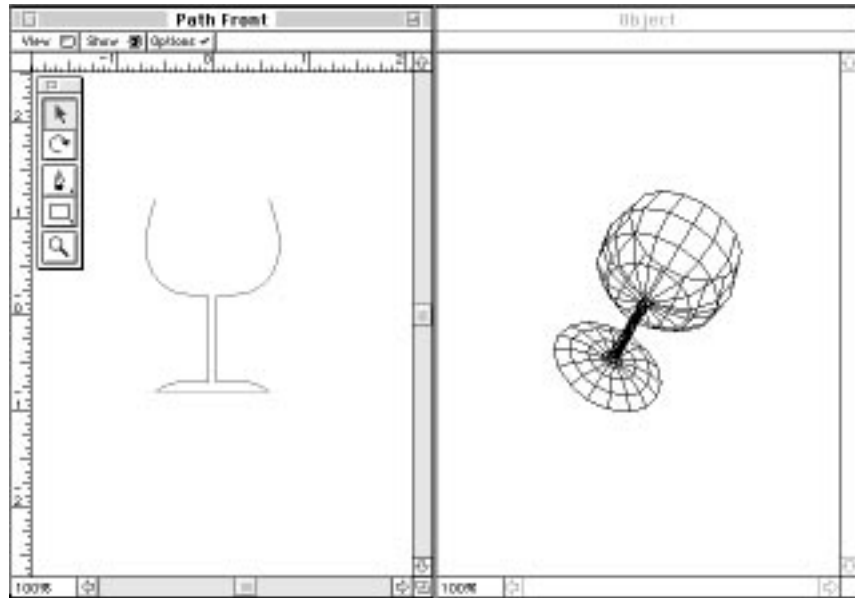
## MAKING THE BOTTLE

1. Select the Lathe tool from the Toolbox, which will pop out to give several choices of pre-made lathed objects. Select the first option, which looks like a wine glass.



2. Click in the Front view to place the lathe object. A default lathe object appears.

3. Select the V-Plane tool, and double-click on the wine glass to bring up the workshop.



Because the wine glass is a lathe object, the workshop opens with the Lathe layout active. A lathe object is any object which is symmetrical about an axis. Examples include a wine glass, a lamp shade, or a baseball bat. The workshop allows you to create not only lathes, but also Partial Lathes, Extrusions, Path Extrusions, and true Freeform objects.

The Lathe layout in the workshop uses two windows to make it easy for you to create exactly what you want. The window on the left is the Path view window, where you will draw the outline that will be revolved, or lathed, 360° around the center line. The window on the right is the object preview window. This window will provide you with a 3D view of your object as you work. All windows in the workshop have their own set of *window menus* that allow you to set specific options for that window. These are distinct from the menus in the menu bar at the top of the screen.

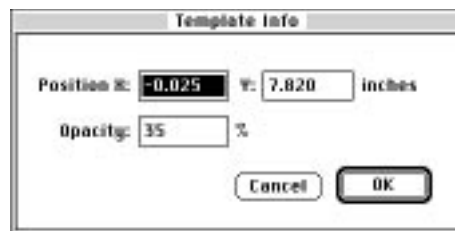


The workshop allows you to import PICT files to use as templates that you can trace over. We'll make use of a template to help you draw an accurate bottle. The template for the bottle was drawn using Adobe Illustrator, and converted to a PICT using Adobe Photoshop.

1. In the Path Front window, choose Get Template from the Options menu in the window.
2. Navigate the Open dialog until you locate the "Bottle Template" file in the Infini-D tutorial folder. Select it and click OPEN.

You should now see a drawing of the outline of a bottle in the Path Front window. Next you will move the outline and change its opacity to make it easier to trace over.

3. Choose Template Info from the Options menu in the window.
4. Enter -0.025 in the X-Position box, and 7.82 in the Y-position box. This will place the bottom of the template right on the horizontal axis.
5. For Opacity, enter 35%.
6. Click OK.



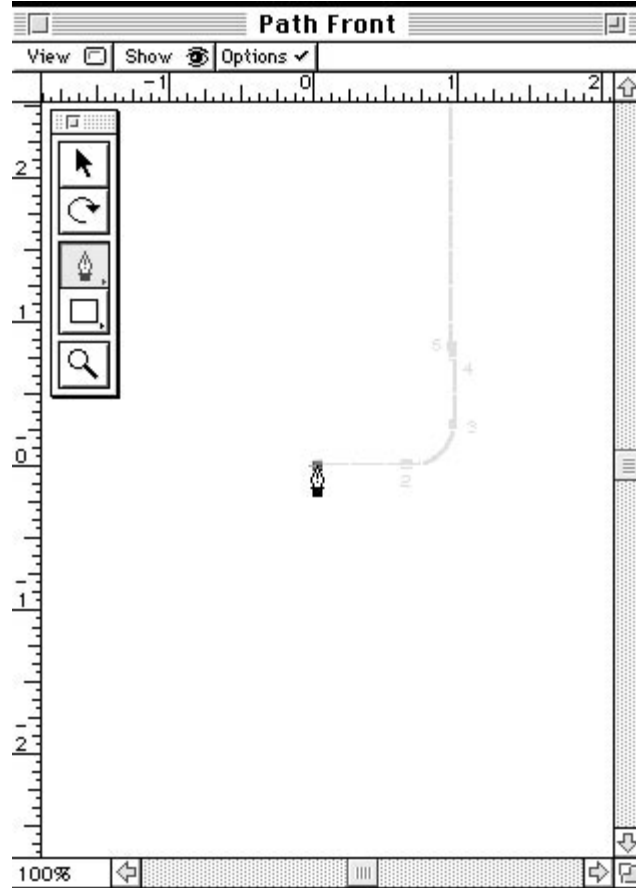
Position the template and make it transparent in the Template Info dialog box.

The template should now be properly aligned with the center axis, with its base sitting at the intersection of the axes. You should also notice that it has changed in color from black to a light gray. This will make it much easier for you to see your path line as you trace over it.

1. To help you draw accurately, choose Rulers from the Show menu in the Path View window.
2. Make sure the Path Front view window is active, and select the Pen tool from the Toolbox.



3. Starting at point #1, click to place a point.



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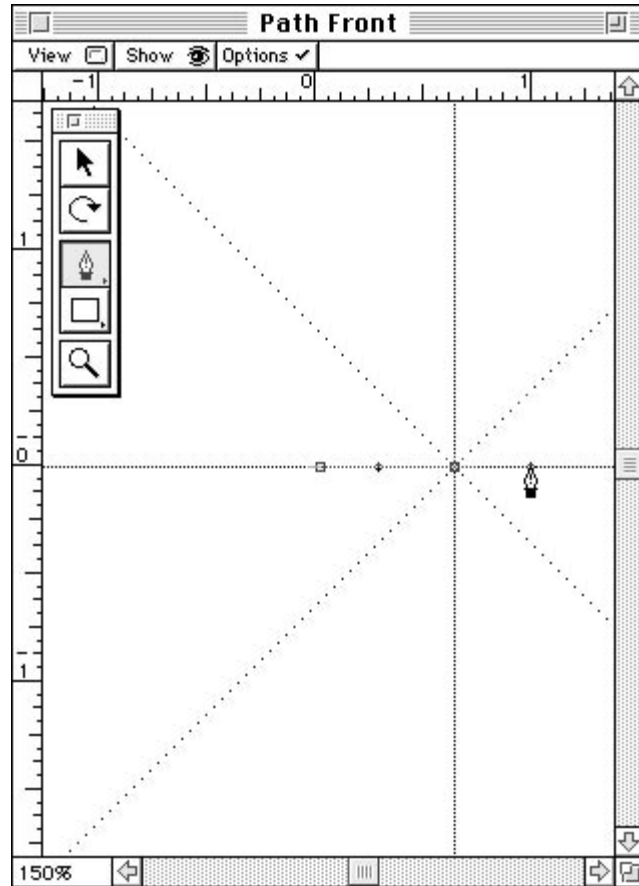
*When you start drawing a new outline in the Lathe layout of the workshop, the existing outline is automatically deleted and replaced with the new one. If an endpoint of the existing line is selected, however, the new outline will be connected to the selected point.*

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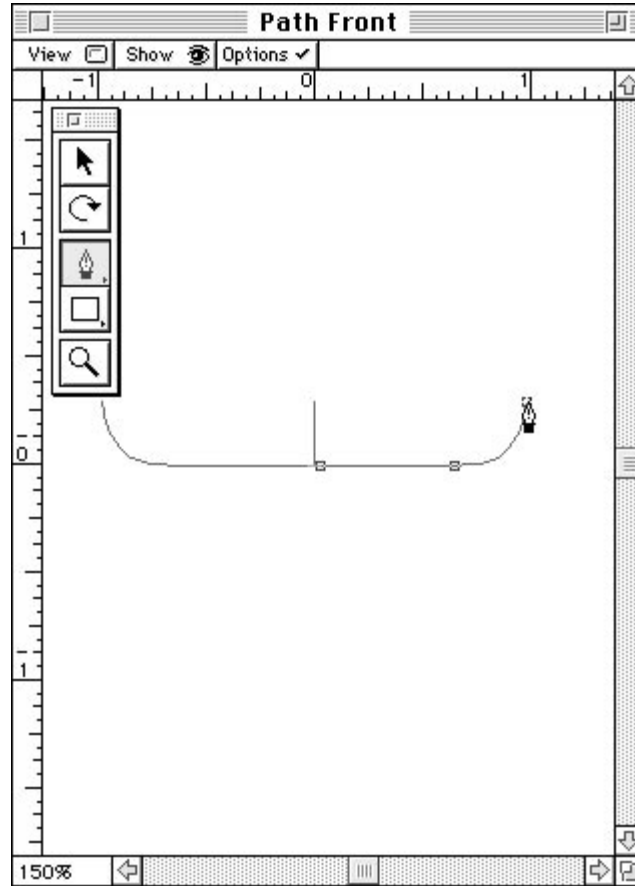
Depending on the size of your monitor, you may want a closer view. To zoom in, select the Zoom tool from the Toolbox and drag a rectangle around the area you wish to magnify. Once you've finished laying in the points for the bottom of the bottle, you can use the scroll bars to move up to the middle and upper portions of the bottle.

4. Move to the right side of the template, just before where the bottle curves up, and click and drag to create point #2, pulling out a control handle.

The handle should extend to the right of the point until it's about as far as the edge of the bottle.



5. Point #3 should be placed at the far right of the template, just above the bottom curve.  
The handle you pull out from point #2 causes this section of the line to be curved.



6. Place points #4, 5, 6, and 7 by simply clicking on them; you will not need to drag out direction handles.
7. At point #8, click and drag straight up about 1/4".  
To ensure that you are pulling absolutely straight up, press the SHIFT key as you're dragging to constrain the line to true 90° angles.
8. Click at point #9 to place it.

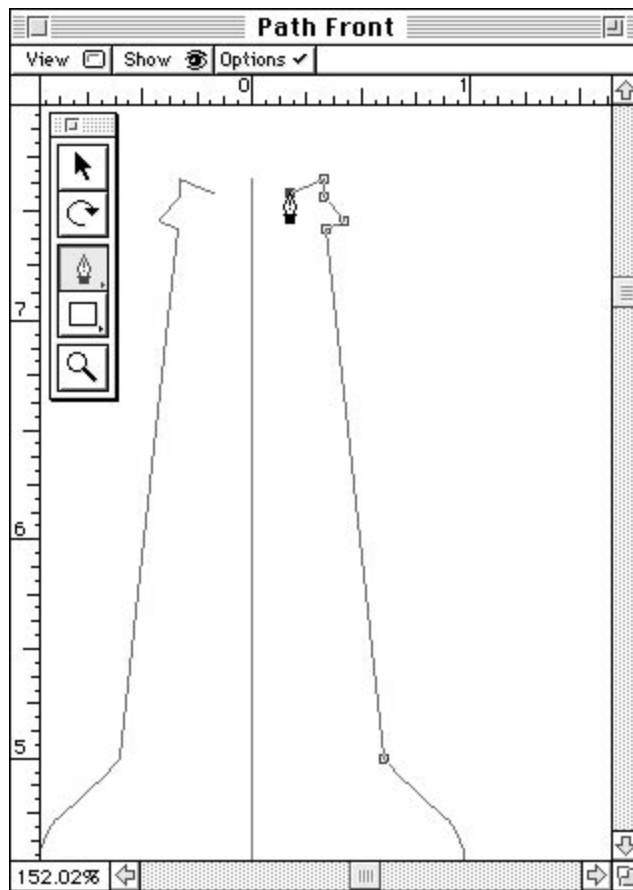
Because the line curves before point #9 and is straight afterward, we need to change it to a Corner Point. This allows a line to radically change direction.

**9. Choose Corner from the POINTS menu.**

**10. Now place point #10 with a single click.**

You should now see that the line from 8 to 9 is curved, and from 9 to 10 it's straight.

**11. For points #11, 12, 13, and 14, you can simply click to place them, because they will mostly be covered by the bottle cap you'll make in the next chapter.**



Your new bottle shape now appears in the Object view window.

If you are happy with your bottle shape, choose Exit Workshop from the FILE menu or type COMMAND-E to exit the workshop. Otherwise, you can fine tune your bottle outline by adjusting individual points and handles. To edit points and handles, select the Arrow tool, and simply click and drag one point, a selection of points (using the standard shift-select), or a handle. Feel free to delete your original path and start over.

Once in the world, center the bottle in the scene through the object floater.

1. If it is not already visible, open the Object Floater by pressing COMMAND-2.
2. Select the bottle.
3. Enter '0' for the X, Y, and Z position values (top row in the floater) and press the Enter key.

Once you have your bottle the way you like it, save your scene. Choose Save from the FILE menu and name the file "Bottle." Click OK.

For the bottle to look good, it should have a good colored glass surface. We'll edit a pre-existing surface to create a nice golden-brown colored glass.

## MAKING COLORED GLASS

1. Using the V-Plane tool, select the bottle in any view window.
2. Choose Surface Floater from the WINDOWS menu to open the Surface Floater, if it is not already open.
3. Select a glass surface by choosing Glass from the Surface pop-up.
4. Click on the Copy button to make a copy of the glass surface that you will change.

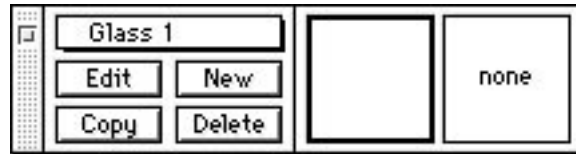


It is often good to make a copy of a surface before making changes. That way, you can always go back to the original, if need be.

5. Click on the Edit button.
6. First change the name of the surface. Call it “Golden Glass.”
7. To change the color of the glass, click on the Edit Color button, and choose a medium-to-dark golden brown. Click OK.

Now we need to adjust several of the Surface Properties in order to get the glass to look the way the client wants. Infini-D gives you the ability to precisely control how any surface looks.

8. Drag the Diffuse Shading slider until it reads around 40%.  
Alternatively, you can type the number 40 in the text box next to the Diffuse Shading slider. This allows the golden color you made to be more visible.
9. Drag the Reflectiveness slider to 15%, to give just a hint of reflection.
10. Drag the Transparency down to 50%.



Use the Surface Information dialog to create the Golden Glass surface.

11. Click OK.

## RAY TRACING

If you render your bottle, you will see that it now has a brown color and highlights. In order to see the bottle’s transparency, you will need to ray trace the image. Ray tracing is an extremely high quality rendering process that “traces” a path from the viewpoint to every point in the scene, and calculates what each point should look like. Unlike the “Best” rendering setting in the Views Floater, ray tracing is able to calculate transparency, refraction, and true reflections. (The Best setting can only reflect environment maps.) For a more detailed description of ray tracing, see the Rendering section in the Infini-D User’s Manual.

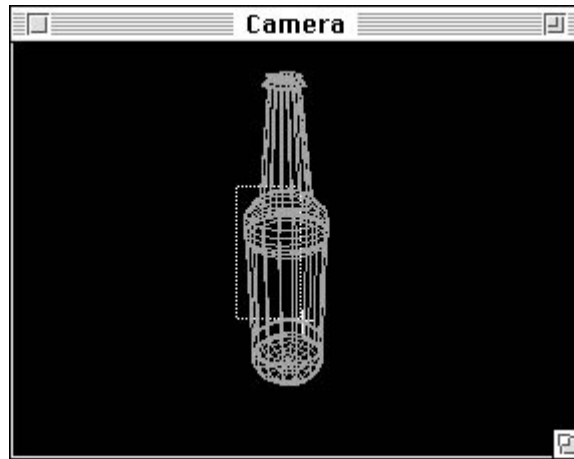
This is when the Local Ray Trace tool comes in handy. The Local Ray Trace tool allows you to ray trace any portion of any view window. This is a great time saver, because often you just need to take a look at a small portion of your image.

1. From the Toolbox, select the Local Ray Trace tool.



2. In the Camera view window, click and drag a rectangle around the top portion of the bottle.

This will cause Infini-D to render just that portion of your window.



Use the Ray Trace Marquee tool to get a high-quality rendering of a portion of the image.

## COMPOSING A SURFACE

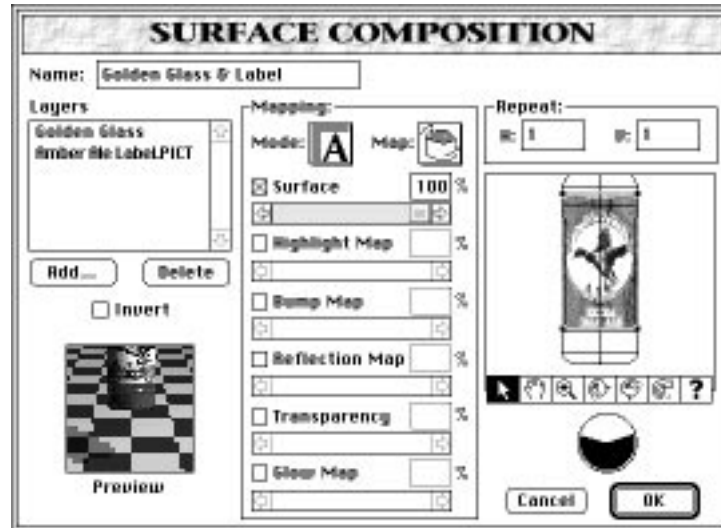
Even though the glass looks good now, it needs a label for Amber Ale in order to look “finished.” Infini-D’s powerful surface composition abilities make adding a label a cinch.

1. Make sure the bottle is selected, then choose Compose Surface from the RENDER menu.
2. Give your composed surface a name, like “Golden Glass & Label.”



3. In the list of textures at the left of the dialog, double-click on the **White Plastic** surface.

This will bring up a list of available textures. Choose the Golden Glass surface you made earlier from the pop-up list, and click OK. This will make Golden Glass the base surface for the bottle.



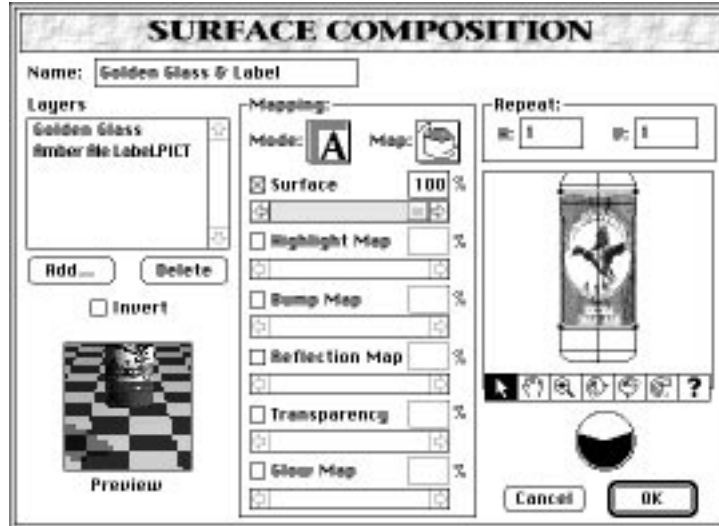
4. Click on the **Add** button below the texture list; then Click on the **Get Image** button in order to locate the “Amber Ale Label” file in the **Infini-D** tutorial folder.
5. Select the “Amber Ale Label” file, and click **Open**.
6. Make sure to check the **Use Picture’s Dimensions** check box; then click **OK** to return to the **Compose Surface** dialog.

The label for the bottle was initially created in Adobe Illustrator, and then was converted to a PICT file using Adobe Photoshop. Any PICT file (or PICS file or QuickTime movie) can be imported into InDesign as a texture.

7. Under **Mapping**, click on the **Map** pop-up menu, and choose the **Cylindrical** mapping style.

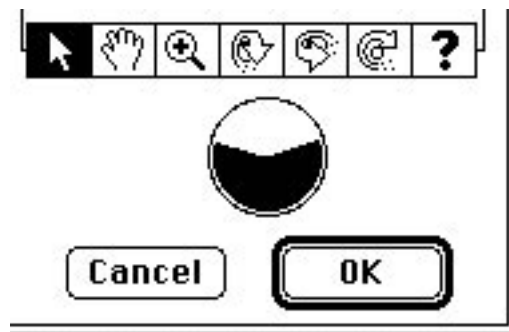
This will rotate your bottle so that the label can be properly applied. Please note that any rotations done in the Surface Composition Dialog have no effect on the object’s orientation in the scene. It is only rotated within the dialog to give you precise control when placing textures.

8. Using the Arrow tool in the object window, click and drag the label until it is positioned on the lower portion of the bottle as shown. Drag the square handles on the corners of the label to make the top and bottom fit the bottle correctly. (You may need to use the Zoom and Hand tools to see the appropriate parts of the bottle.)



Use the object window on the right side of the dialog to place the label in the right position and stretch it to cover the bottle.

9. To cause the label to wrap only part of the way around the bottle, click and drag on the coverage control dial, which is located under the object window. The black represents how far around the image will wrap. Drag until it is roughly 60% covered, or 215°.



Change the coverage control dial so the label wraps around 60% of the bottle.

10. Click OK.

Your bottle should now have a nice golden color and bear the Amber Ale label. If you wish, you can do a Local Ray Trace around the lower portion of the bottle to see the label in place. You could also use the Best Shade, which will render your label properly (but not the transparency of the glass). Note that the transparency of the glass will not be very apparent, since the background is still black: there is nothing behind the bottle to see.

Now is a good time to save your scene.





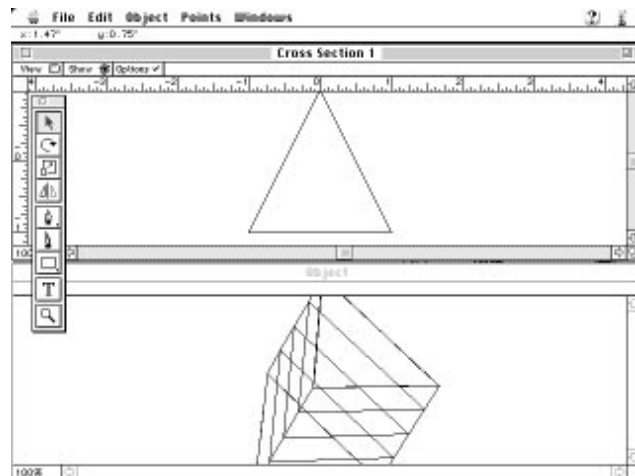
# 5 Modeling a Bottle Cap

For the beer bottle to look right, it needs to have a cap. To make one, we'll use Infini-D's Path Extrusion setting in the new modeler.

1. Choose **New** from the **FILE** menu to create a new scene.
2. In the **Toolbox**, click on the **Extrusion tool pop-up** and select the first icon.



3. Click in any view to place the object.
4. Select the **V-Plane** tool from the **Toolbox**, and double-click on the new object, or type **COMMAND-E** to enter the workshop.



The extrusion layout shows the **Cross-section** window and the **Object** window.

## WORKSHOP WINDOW LAYOUTS

The first thing you'll want to do is set up your window layout.

1. **Choose Layout from the WINDOWS menu, then select Path Extrusion from the Layout sub-menu.**

Now you have three windows showing — Cross-section, Object, and Path Front. If they are not already visible, you should turn on rulers and grids for the Cross-section and Path Front views to help you draw your object more accurately. To do this:

2. **Make the Cross-section window active, and choose Grid from the Show window menu.**

Then choose Rulers from the same menu. Repeat for the Path Front window.

## CROSS-SECTIONS

To make the bottle cap look realistic, we'll need to use several cross-sections. With the SplineForm modeler, you can set up multiple cross-sections of different shapes, and create a path for the sections to follow. Infini-D will automatically stretch a "skin" surface over all of these sections, like placing a surface over the ribs of a ship's hull. A proper bottle cap will need three cross-sections to look right. The first cross-section of the bottle cap needs to be a small circle; the second, a larger circle just below it; and the third, a circle with "crimps" in it. Since a bottle cap does not bend from one cross-section to another, the path is simply a straight line.

Because the default object we have chosen is a straight extrusion, it was created using only one cross-section. For the bottle cap you'll need to add cross-sections where the shape of the object changes. This is easily done by positioning the Cross-section Marker, which appears as an open box in the Path Front window, and telling Infini-D to add a new cross-section at that point.



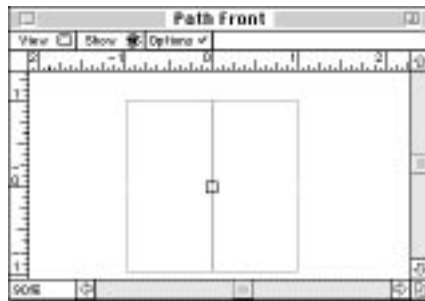
The Cross-section Marker indicates at what point on the path the current cross-section is located.

1. Make the Path Front window active.
2. Select the Arrow tool, and click and drag the Cross-section Marker to the top of the path.



Move the Cross-section Marker to the top of the path and choose Insert Cross Section from the Options window menu to add a new cross-section.

3. Choose Insert Cross-section from the Options menu in the Path Front window.
4. Move the Cross-section Marker to the middle of the Path.



Move the Cross-section Marker to the middle of the path and add another cross-section.

5. Again choose Insert Cross-section from the Options menu in the Path Front window.

## CREATING AND EDITING OUTLINES

You now have three separate cross-sections, which at the moment are all the same triangular shape. Next, you need to create new shapes for each cross-section.

1. Make the Cross-section window active. At the moment, the window is actually titled "Cross-section 2," as seen in the window's title bar.

Infini-D automatically adds the number of the active cross-section to the window title to help you easily identify which cross-section you're working on.

2. From the View window menu in the Cross-section window, choose "Cross-section 3."

This will activate the third (top) cross-section in your object. This menu provides access to all the cross-sections of the current object.

3. **Select the Zoom tool from the Toolbox, and click twice in the center of the Cross-section window to zoom in on the triangle.**

The workshop allows you to place guides, which help to make object construction easier. To add guides:

4. **With the Cross-section window still active, click and drag down from the horizontal ruler at the top of the window.**  
Place the guide even with the 3/8" mark on the vertical ruler.



Drag a guide from the top to 3/8". The guides will help make the cross-sections the right size.

5. **Drag out another guide, this time from the vertical ruler on the left side of the window.**  
Place this guide even with the 3/8" mark on the horizontal ruler.



Drag a vertical guide to 3/8.



6. From the Toolbox, click and hold on the Polygon tool, and select the Circle tool from the pop-up.



7. While holding down the SHIFT key, click and drag from the exact center of the grid out to one of the guides you placed.

When the cursor is on top of the guide, release the mouse to create the circle. The SHIFT key constrains the proportions of the shape, forcing it to be drawn as a perfect circle instead of an ellipse.

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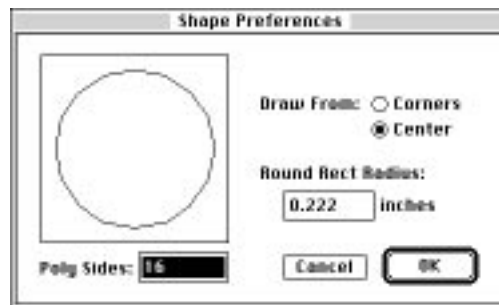
*Holding the COMMAND key while using the Polygon tool centers the shape on the origin, regardless of the spot that you clicked.*

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8. Select the Arrow tool from the Toolbox, click on the triangle shape to select it, and hit the DELETE key to delete it.

That completes the top cross-section for the Bottle Cap. Next, you'll create the middle cross-section.

1. From the View window menu in the Cross-section window, choose Cross-section 2. This will activate the middle cross-section.
2. Select the Arrow tool.
3. By clicking and dragging with the Arrow tool, move each guide 1/16" (one tick-mark on the ruler) farther away from center.  
Doing this will allow you to create a slightly larger circle for this cross-section.
4. Select the Regular Polygon tool (the last shape on the Polygon tool pop-up menu, which looks like a hexagon) from the Toolbox.
5. Double-click on the Polygon tool in the Toolbox to bring up the Shapes Preferences dialog box.  
Type 16 in the text box next to Poly Sides and click OK.



Double click on the Polygon tool and change the Polygon Sides to 16.

6. **This time, hold down the COMMAND and SHIFT keys, click and drag from any spot in the window to one of the guides you placed.**  
When the cursor is on the guide, release the mouse to create the circular-shaped polygon.
7. **Select the Arrow tool from the Toolbox, click on the triangle shape to select it, and hit the DELETE key to delete it.**
8. **Choose Select All from the EDIT menu. Then choose Curve from the POINTS menu.**  
This turns the shape from a 16-sided polygon with sharp points into a perfect circle with curve points.

---

*This middle cross-section was made with 16 segments, in order to create a smooth blend from the crimped cross-section on the bottom (which you are about to create). If it were made with a circle instead, parts of the object could twist slightly, as the 16 points of the crimped cross-section blended to the four points of the circle.*

---

Now we'll make the "crimped" cross-section. To make this, you'll use the same guides as you did for cross-section 2.

1. **From the View window menu in the Cross-section window, choose Cross-section 1.**  
This will activate the bottom cross-section.
2. **Select the Regular Polygon tool (the same one used for cross-section 2) from the Toolbox.**
3. **Once again holding down the COMMAND and SHIFT keys, click in the window and drag to one of the guides you placed.**
4. **Select the Arrow tool from the Toolbox, click on the triangle shape to select it, and hit the DELETE key to delete it.**

You now have a 16-sided polygon that you need to "crimp" to form the bottom part of the bottle cap. An easy way to do this is by scaling some of the points:

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*When working with even small details, it's good practice to make your window as big as possible, so it's easier for you to be accurate.*

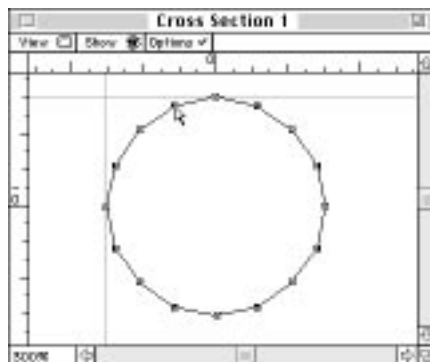
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1. Click on the zoom box in the upper-right corner of the Cross-section window to expand it to fill the window.
2. With the Zoom tool, drag a marquee around the circle.  
This zooms in to the circle so the points are more accessible.
3. Select the Arrow tool and click once on the circle to highlight all of the points.
4. Click on the point just to the right of the upper-most point in the circle to select it.



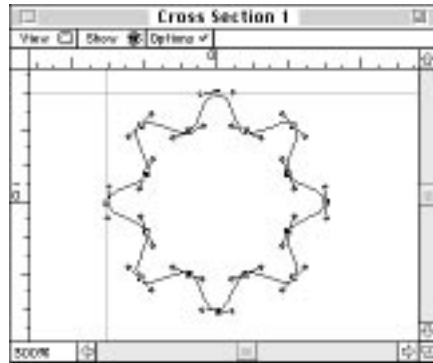
Select the point just to the right of the upper-most point in the circle.

5. Now, hold the SHIFT key and continue around the circle, selecting *every other* point on the circle.  
You should have eight points selected.



Hold down the SHIFT key and select every other point on the circle.

6. Select the Scale tool in the toolbox.
7. While pressing the SHIFT key, click and drag toward the center of the window until the info bar shows the scaling values to be roughly 70%.  
You will see that the selected points have been equally scaled inward, toward the origin.
8. Choose Select All from the EDIT menu.  
Choose Curve from the POINTS menu to smooth out the crimped outline.



Scale the selected points in by 70% and then smooth the entire shape to make the “crimped” bottom of the bottle cap.

9. Under the WINDOWS menu, choose Path Extrusion from the Layouts sub-menu to return the window layout to the default set-up.

That’s all you need to do to create the crimping effect.

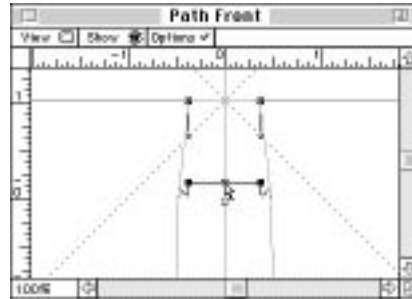
## THE PATH

Finally, we need to adjust the length of the path and set the end caps.

1. Make the Path Front window active.
2. Turn on the rulers, if they are not already visible, by choosing Rulers from the Show window menu in the Path Front window.
3. Click on the zoom window box in the upper right-hand corner of the Path Front window.

The window should now expand to fill the screen.

4. With the Zoom tool, drag a marquee around the object.  
This zooms in to make the points more accessible.
5. Using the Arrow tool select the Path, which is indicated by the purple line, to highlight all of the points.
6. While holding the SHIFT key, click and drag the top point of the path down to about the  $3/16''$  mark ( $0.18''$  in the info bar) on the vertical ruler.



Drag the top point of the path to  $3/16''$ .

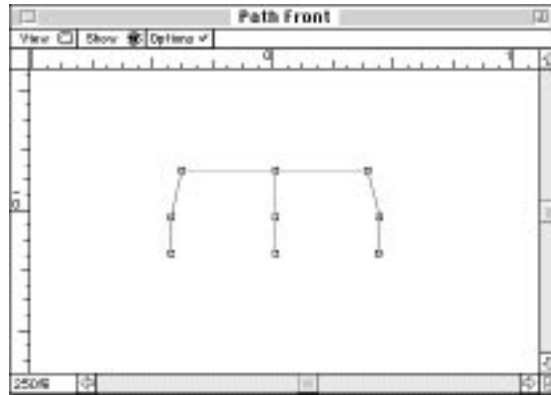
7. From the Show window menu in the Path Front view, choose Cross-section Marker.  
This will hide the marker, giving you access to the point it was obscuring.
8. With the SHIFT key pressed, click and drag the bottom point up to about the  $-3/16''$  mark on the vertical ruler.



Drag the bottom point of the path to  $-3/16''$ .

The outer shape of the object may have become slightly deformed while manipulating the path. This is easy to remedy.

9. Choose **Rails Active** from the **OBJECT** menu to gain access to the points on the rails.
10. Choose **Select All** from the **EDIT** menu to select all of the points on the path and rails.
11. From the **POINTS** menu, choose **Plain** to straighten the path and rails, and then choose **Curve** to automatically smooth them to the proper shape.



First make all of the points Plain points, and then make them Smooth points, to fix any kinks in the path.

Finally, we want to add a flat surface, or cap, to the top of the bottle cap.

12. Choose **End Caps** from the **OBJECT** menu, and choose **Ending Cap** from the sub-menu list.

Now you have a properly proportioned bottle cap with the top end closed.

13. Choose **Exit Workshop** from the **FILE** menu or press **COMMAND-E**. This returns you to the world.
14. Choose **Save** from the **FILE** menu, and name your scene "Bottle Cap." Click **OK**.

## CREATING A SURFACE FOR THE CAP

Your bottle cap should look pretty good now — but when rendered, it would look as though it were made of plastic. Like the bottle, the cap needs both a surface and a label. First, you need to create a realistic aluminum surface.

1. Choose New Surface from the RENDER menu.
2. By default, the Color Map pop-up should be set to Flat Color, and the color chosen should be white.
3. The Effect pop-up should be set to None.
4. To create a surface with the properties of aluminum, enter the values from the image below:

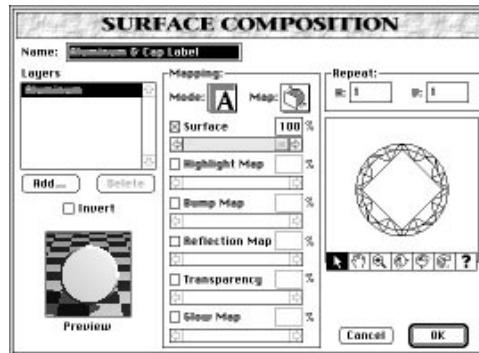
Property	Value	Unit
Diffuse Shading	92	%
Specular Highlight	82	%
Shininess	88	%
Metallicity	100	%
Glow	0	%
Reflectiveness	20	%
Transparency	0	%
Index of Refraction	1.00	

Create a new aluminum surface with these values.

5. Name the new surface “Aluminum,” and click OK.

Now you need to apply the label to the top of the cap.

1. Use the V-Plane tool to select the cap, and choose **Compose Surface** from the **RENDER** menu. This will open the **Surface Composition** dialog box.
2. Name your texture “**Aluminum & Label.**”
3. Double-click on **White Plastic** in the surface list.
4. Choose **Aluminum** from the surface pop-up menu and click **OK.**



Change the White Plastic layer to Aluminum.

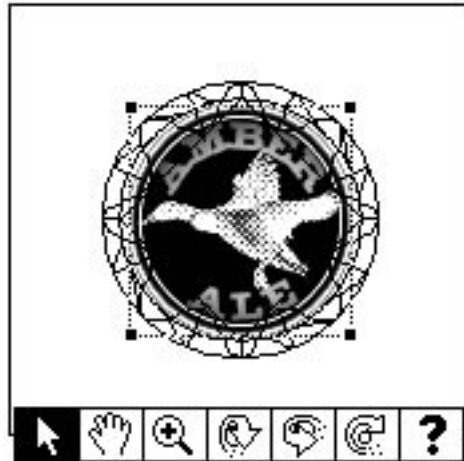
5. Now click on the **Add** button, so you can add a label on top of the aluminum surface.
6. Click on **Get Image**, and locate the “**Cap Label**” file in the **Infini-D tutorial** folder.  
Click **Open** to import the image and then click **OK.**

Like the bottle’s label, this file was originally created in Adobe Illustrator, and then converted to PICT format using Adobe Photoshop.





7. Check the box next to Use Picture Dimensions and Click OK.
8. With the Cap Label selected, choose Straight from the Map pop-up menu.
9. Use the Arrow tool to position the label over the cap.
10. Resize the label by holding the SHIFT key and dragging one of the corner points.  
Size it so that it sits on the top surface of the cap and does not overlap onto the sides.



Position the label for the cap so it fits entirely within the smaller circle of the cap.

---

*You will probably need to move and resize a few times in order to get your label perfect.*

---

11. Click OK to exit the Surface Composition dialog box.

If you render the camera view in Best Shade, you will see the label on the bottle cap. Save your bottle cap scene.



The rendered bottle cap

## PUTTING THE PIECES TOGETHER

The bottle and cap need to be linked together and then combined with the 3D text created earlier. Objects are moved between scenes by using copy and paste:

1. **Select the bottle cap in any view window and choose Copy Object from the EDIT menu.**
2. **From the Scenes sub-menu under the FILE menu, choose the Bottle scene.**
3. **Choose Paste Object from the EDIT menu to place the bottle cap in the same scene as the bottle.**

Now we need to put the cap on the bottle, and link them together so that they will move as one object when we animate them. Use the Zoom tool and Hand tool to get a close view of the cap and the top of the bottle, as needed.

1. **Make the Front view active and select the H-Plane tool.**
2. **In the Front view, click and drag the cap so that it sits on the top of the bottle.**  
Remember that it should overlap the top of the bottle slightly, as it would on a real bottle.
3. **Switch the right view and use the H-Plane tool to move the cap forward or backward, as needed, to center it on the bottle.**
4. **If necessary, switch to the Top View and use the V-Plane tool to make any final adjustments.**



Place the cap directly on top of the bottle, slightly overlapping it.

When your cap is properly in place, it is time to link it to the bottle.

1. **Select the cap in any view.**
2. **Choose the Link tool from the Toolbox.**
3. **Hold the SHIFT and OPTION keys and click on the bottle.**

You should see a line “shoot” from the cap to the bottle. This is to let you know what has been linked together. The line shoots from the child (the cap) to the parent (the bottle). The modifier keys create a “full link” so the cap can not be inadvertently moved away from the bottle.

4. **Select the V-Plane tool, and click and drag the bottle to a new position.**

As you can see, the cap moves with the bottle. Now, when we animate the bottle, the cap will automatically stay positioned on top of the bottle.

5. **Choose Save As from the FILE menu and save your scene under a name like “Bottle and Cap.”**

## **BRINGING THE BOTTLE AND TEXT TOGETHER**

The next step is to bring the bottle and cap into the scene with our 3D text. This can also be done with a simple copy and paste.

1. **Select the bottle.**
2. **Choose Copy Object from the EDIT menu.**
3. **Choose Scenes from the FILE menu, and select Amber Ale-Text Only from the list.**
4. **Choose Paste Object from the FILE menu.**

The bottle and cap should now be pasted into the scene with the text. If the bottle is overlapping the text in space, simply switch to the Top View, and drag the bottle with the V-Plane tool so that it is behind the text objects.



The completed scene with the text and the bottle assembly.

Now we'll save the scene with a new name, preserving the original files in case we need them again.

5. **Choose Save As from the FILE menu.**
6. **Name the new file "Amber Ale Scene," and click OK.**

# 6 Lighting

One of the keys to a professional-looking animation is effective lighting. Infini-D's new lighting controls give you the ability to adjust all of a light's settings to achieve just the right look. First, we'll take a quick look at the available lighting options. Then we'll light the animation we just finished creating.

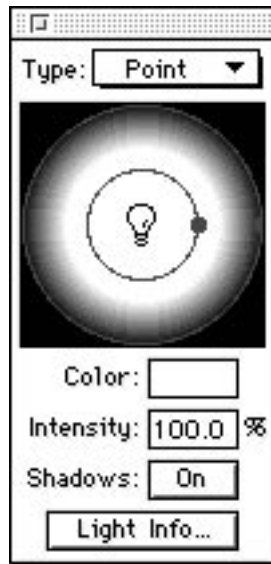
## LIGHTING OVERVIEW

1. **Open the file named "Lighting Tutorial" in the Infini-D tutorial folder.**  
This file contains a cube with a floor and two walls for you to light.
2. **Choose Light Floater from the WINDOWS menu to open the Lighting Floater.**  
The Light Floater gives you access to all of the controls for your lights.
3. **Choose Views Floater from the WINDOWS menu to open the Views Floater.**
4. **From the MODEL menu, choose the Select Object sub-menu and choose Light from the list.**  
The light in your scene becomes the selected object, and all of its attributes are displayed in the Light Floater.

## TYPES OF LIGHTS

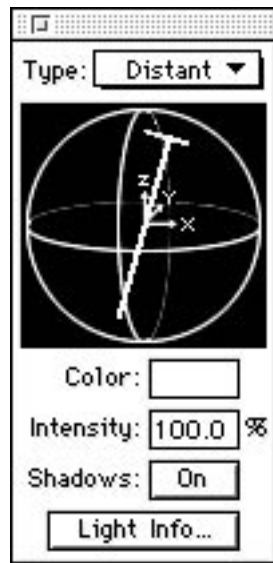
Infini-D supports four types of lights: Point, Distant, Spot and Ambient. All but Ambient are accessible through the Lights Floater. (Use the Environment command from the RENDER menu to change Ambient light.) You can see a representation of each type of light in the Lighting Floater.

5. Choose Point from the pop-up menu in the Lighting Floater to change the light type.



**Point lights** shine equally in all directions from a specific point (hence the name). They can best be thought of as extra-strength versions of standard household light bulbs. Whenever you add a new light, it starts out as a Point light.

6. Choose Distant from the pop-up menu in the Lighting Floater.

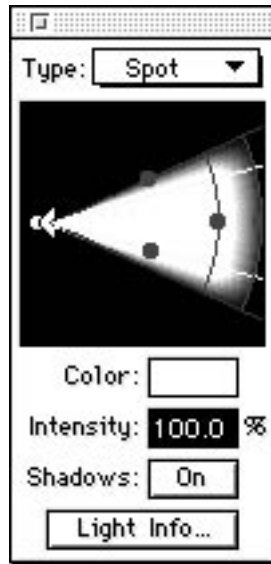


**Distant lights** shine equally on all objects from a specific direction. Much like sunlight or moonlight, a Distant light generates a huge parallel beam of light that covers everything in a scene. Distant light is Infini-D's default light type — whenever you create a new scene, it starts out with a Distant light.

## 7. Choose Spot from the pop-up menu in the Lighting Floater.

**Spotlights** shine in a specific direction from a specific point. Spotlights work just like traditional theater or photography lights. The beam from a Spotlight spreads from the source point at the angle you define.

You'll see that, as you select each light type, the Light Floater changes to reflect the selection.



Now let's see what each light type looks like once it's rendered.



- 1. Choose Point from the Type pop-up in the Lighting Floater.**
- 2. Make the Camera view active, and choose Best from the Views Floater to render the Camera view.**

As you can see, the light is shining from above the objects, casting a shadow below the cube. Because a Point light shines in all directions, it is also shining on the walls.

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*Each time you change the light type, or any lighting option, Infini-D will re-render your scene with the new settings figured in. This scene should take about 15 to 20 seconds to render on a Power Mac.*

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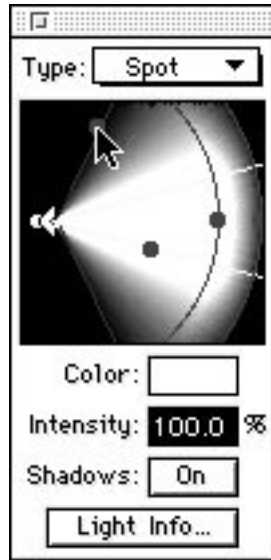
- 3. In the Light Floater, choose Spot from the Type pop-up.**

Now you'll see that the light is only shining on a part of the model, because the spotlight does not shine in all directions. Also, you'll probably find that it's not shining exactly where you'd like it to. That's where the Point At command comes in.

- 4. From the OBJECT menu, choose Point At, and then choose Cube from the list.**

Now the light is pointing directly at the center of the cube, and is barely lighting the walls. Remember that Point At can be used for cameras as well as lights. Now let's try expanding the beam of light.

- 5. To adjust the angle of the beam, click and drag on the Outer Beam Indicator in the Lighting Floater.**



Both the inner and outer beams can be adjusted. For more precise adjustments, click on the Light Info button and enter specific values in the Beam Angle boxes.

Now let's look at a Distant light.

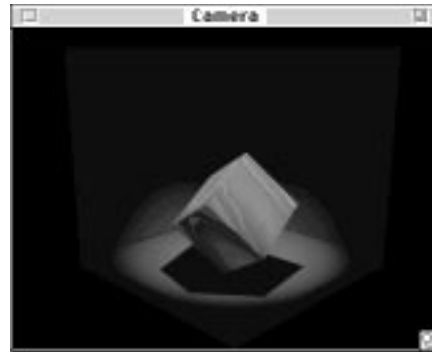
**6. In the Lights Floater, choose Distant from the Type pop-up.**

As you can see, the Light Floater changes to show you a globe, which is a representation of your 3D world viewed from the front. The white disc represents the position of your Distant light in your world. The line emanating from the disc indicates the direction in which the light will shine. To change the direction of the light, simply click and drag the light icon around the globe.

A few more little experiments will show us some of the other lighting options available. Try doing these:

1. Change the light type back to Spot.
2. Click on the Color swatch in the Light Floater.
3. Choose a medium red from the Color Picker and click OK.

Your scene now looks like it's washed in red light.



The scene rendered with a colored light

## USING GELS ON SPOTLIGHTS

Instead of a single color, you can use a color image as a Gel to make the spotlight project the image onto the scene. Before proceeding, set the light's color back to white.

4. Choose Import from the FILE menu, and then choose Image from the sub-menu.
5. Locate the "Color Blend Gel" file in the Infini-D tutorial folder and click Open.  
Then click OK in the Get Image dialog.



Open the Color Blend Gel file to use as a color filter for your spotlight.

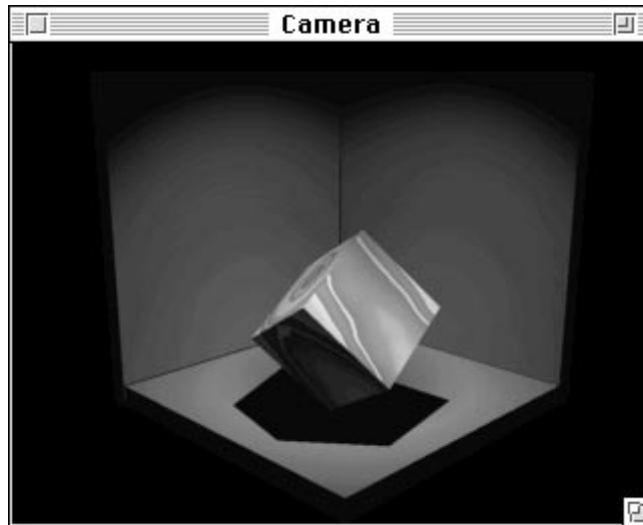
- Click on the Light Info button in the Lighting Floater.
- Click on the Gel pop-up, and choose the Color Blend Gel from the surface list.



Select the image you just imported as a gel for the spotlight.

- Click OK.

The rendering now shows a circular color gradient pattern being projected from the light.



## USING MASKS ON SPOTLIGHTS

You can also change the shape of the light using a grayscale image, so that it does not always fall in a circular pattern.

9. Choose Import from the FILE menu; then choose Image from the sub-menu.
10. Locate the “Window Mask” file in the Infini-D tutorial folder and click Open. Then click OK in the Get Image dialog box.



Open the Window Mask file to use as a light filter (sometimes known as a gobo) for your spotlight.

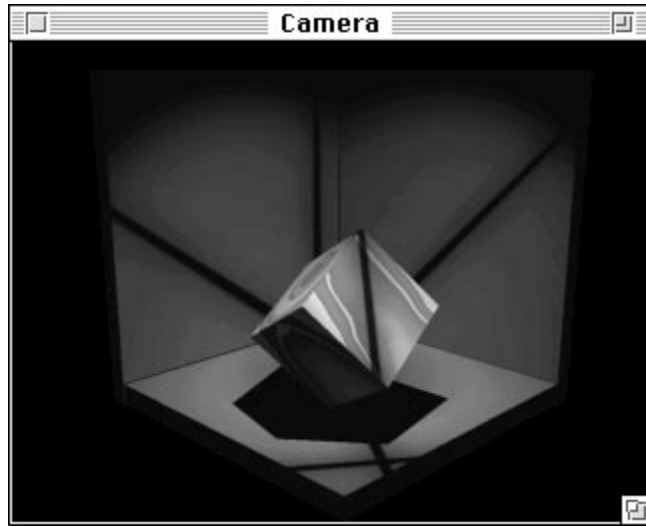
11. Click on the Light Info button in the Lighting Floater.
12. Click on the Mask pop-up, and choose the Window Mask from the surface list.



Select the image you just imported as a mask for the spotlight.

13. Click OK.

The combination of the mask and the gel makes the light look as if it's shining through a tie-died window. Combining multiple elements can help you create interesting lighting with very little effort. Any PICT file can be used as Gel or Mask. Note that a Gel uses the color information of a PICT to alter the color of the light, while a Mask only uses the grayscale values (light to dark) to affect the intensity of the light. Masks completely ignore color.



The scene with both a gel and mask applied to the spotlight

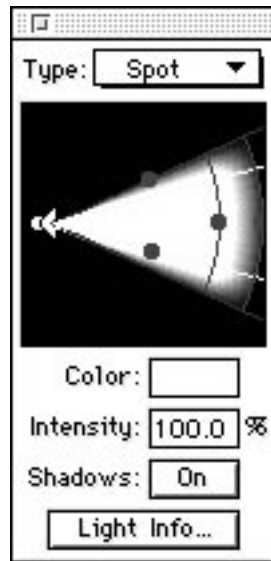
That's a quick look at Infini-D's new lighting controls. Next, you'll apply what you've learned to the animation you've been sweating over all day.

## ADDING LIGHTS TO AMBER ALE

For this animation, we'll use a Gel to provide a little extra texture.

First, open the "Amber Ale Scene" file that you've been working on. Then:

1. Choose **Light Floater** from the **WINDOWS** menu to open the **Lighting Floater**.
2. Choose **Select Object** from the **MODEL** menu and choose the **Light** object from the list.
3. Choose **Spot** from the **Type** pop-up in the **Lighting Floater**.



4. Choose **Import** from the **FILE** menu; then select **Image**.
5. Find the "Window Mask" file you used earlier, and click **Open**. Then click **OK**.
6. Click on the **Light Info** button in the **Lighting Floater**, and then choose **Window Mask** from the **Mask** pop-up menu.

Now you need to position and point the light.

1. Using the V-Plane tool in the views that work best for you, position the light so that it is just above and a little to the right of the camera.
2. Choose Point At from the MODEL menu, and select “BOLD” from the list.



Position the light above and to the right of the camera and make it point at the “BOLD” text object.

Save your scene.

When rendered, the effects of the lighting will be subtle, largely because the text objects are getting most of their “lightness” by reflecting the Environment Map. The lighting will be most noticeable on the bottle’s label, and will provide just a pinch of richness. That extra pinch is often the critical difference between a great animation and a merely good one.

That’s the end of scene composition and preparation. In the next chapters you will learn how to animate in Infini-D.



# 7 Animation Overview

## THE SEQUENCER

Now that all of your objects have been placed, linked, and surfaced the way you want, it's time to take a look at Infini-D's Sequencer. The Sequencer provides you with the ability to control every attribute of every object during the course of an animation. Infini-D is an event-based animation program. This means that whenever you perform any manipulation of any object in Infini-D (including movement, rotation, scaling, or even changing a texture), an "eventmark" is created in the Sequencer for that object at the time the object was changed. To get a feel for working with the Sequencer and eventmarks, we'll have you produce a simple animation.

1. Choose New from the FILE menu to create a new scene file.
2. Select the Sphere tool, and place a sphere anywhere in your scene.
3. Choose Sequencer from the WINDOWS menu to open the Sequencer window.



The Sequencer provides you with a timeline for every object in your scene, including cameras and lights. When you create a new scene in Infini-D, you are automatically starting at time zero, as indicated by the World Time Marker.

The location of the World Time Marker indicates the current time in your animation. Any changes made to an object will occur at that particular time.

- 4. In the Sequencer, click on the World Time Marker and drag it to the 1.0 second mark.**

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*Holding down the CONTROL key while moving eventmarks and the World Time Marker will cause them to snap exactly to the tick marks in the Sequencer. This helps to coordinate the motion of multiple objects.*

---



Drag the World Time Marker to one second.

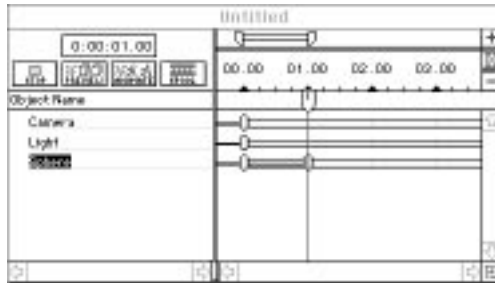
- 5. Now go to the Camera view window, and use the V-Plane tool to drag your sphere object to another part of the window.**
- 6. Select the Uniform Scale tool and scale your sphere to a smaller size.**
- 7. To see what your animation looks like, click on the Preview button in the Sequencer.**



The Preview button will automatically show you a bounding box animation in the currently selected window.

## CREATING EVENTMARKS

As you can see, the sphere changes over time from the zero to the one-second mark. When you make changes to an object over time, Infini-D automatically calculates the in-between frames to create a smooth transition from one eventmark to another. You can also see that a new eventmark has been created on the sphere's timeline at the one-second mark.



The sphere now has an eventmark at one second.

This eventmark indicates that the object is changing at a particular point in time. Let's add some more animation to the scene.

8. Move the World Time Marker to the 2.0 second mark.
9. Use the Squash and Stretch tool to elongate your sphere; then move the sphere to a different place in the world and apply the Red Plastic surface.
10. Click on the Preview button.

As you can see, Infini-D extends your animation, and adds a new eventmark for that object in the Sequencer. You should also see the wireframe changing color from gray to red as the surface changes over time. The strength of an event-based animation system like Infini-D is its ability to easily adjust particular events so that they occur at particular times. For example, if you want the sphere's changes to take place faster, you simply move the eventmarks in the Sequencer.

1. In the Sequencer, click and drag the sphere's second eventmark to frame 00.15 (the 0.5 second mark).
2. Drag the sphere's third eventmark to the one-second mark.



Reposition the eventmarks to shorten the animation.

3. Click on the Preview button.

Now the sphere's changes take place in one second, instead of two.

## **COPYING EVENTMARKS**

While it is extremely easy to lengthen your animation by dragging eventmarks, you may also want to extend it by having your animation sequence repeat itself. This can be done with another very simple technique: copying eventmarks.

- 4. Select the sphere's first eventmark.**
- 5. Holding down the OPTION key, drag that eventmark to frame 01.15 (the 1.5 second mark).**  
A copy of the original eventmark is created.
- 6. Click on the Preview button.**

Now the events that take place for the sphere at the beginning of the sequence occur again at the end. You can also change the overall length of the sequence while maintaining relative movement.

- 7. In the Sequencer, drag a rectangle around all of the sphere's eventmarks.**
- 8. Holding down the COMMAND key, click and drag on the last eventmark to expand or contract your animation.**
- 9. Click on the Preview button.**

While this is a simple exercise, it illustrates the “heart and soul” of Infini-D's Sequencer. In the next chapter, you'll use these same functions to animate your text and bottle.

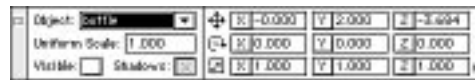
# 8 Animating the Objects

Adding motion will make your beer commercial come to life. In this part of the tutorial, we'll make the text objects fly into view from different directions, and then have the bottle fly in from a distance and rotate to a stop with the label facing toward the viewer.

## ANIMATING THE TEXT

Open up the scene with the 3D text and the bottle by choosing Amber Ale Scene from the Scenes sub-menu under the FILE menu. (If the scene was previously closed, use the Open command and locate the file on your hard drive.) First, you'll make your text objects fly in from off-screen. To make working with the text easier, you'll make the bottle and cap invisible:

1. Open the Object Floater (COMMAND-2) and select the bottle.
2. Uncheck the box next to "Visible" to hide the bottle.
3. Do the same thing for the cap.



Making the bottle and cap invisible makes working with the text easier.

One very useful technique Infini-D provides you with is the ability to animate "backward." With this technique, you begin by placing an object in its final position at the end of the animation, and then move back in time, making changes until you reach the beginning of your animation. When the final position of an object is crucial, this technique is a must.

Since the text is already in the position we want at the end of the animation, we'll use the "backward" technique here.

1. If it is not already visible, open the Sequencer by choosing **Sequencer** from the **WINDOWS** menu or by pressing **COMMAND-6**.
2. Holding the **OPTION** and **CONTROL** keys, click on the eventmark at time 0 for the "BIG" object and drag it so the **World Time Box** reads **0:00:00.22** (frame 22 or 0.75 seconds).  
The **OPTION** key duplicates the eventmark, and the **CONTROL** key makes dragged eventmarks snap to tick marks on the Sequencer's timeline.
3. While holding the **OPTION** and **CONTROL** keys, click on the first eventmark for the "BOLD" object and drag it to **0:00:01.15** (1 second and 15 frames, or 1.5 seconds).
4. Do the same thing for the "BREW" object, placing the duplicated eventmark at **0:00:02.07** (2.25 seconds).



Copy the first eventmark for each of the text objects to a new position in time.

---

*The World Time Box shows time as hours, minutes, seconds, and frames. So 0.00:03.15 is three seconds and fifteen frames, or 3.5 seconds at 30 frames per second.*

---

Now we'll move the text at the beginning of the sequence, thereby making it fly in to its original position.

1. Drag the World Time Marker to time 0 at the beginning of the sequence.
2. With the Zoom tool, hold down the OPTION key and click in the Front View window to zoom out.
3. In the Front view window, drag the "BIG" object up until it moves just out of view in the Camera view window.



Drag the "BIG" object up in the Front view until it is just out of sight of the Camera view.

4. In the Front view window, drag the "BOLD" object off to the left, so it moves just out of view of the Camera view window.



Drag the "BOLD" object to the left in the Front view, until it is just out of sight in the Camera view.

5. Drag the “BREW” object down, so it moves just out of view of the Camera window.



Drag the “BREW” object down in the Front view until it is just out of sight of the Camera view.

None of the text should be visible in the Camera view window; it should be just past the edges of the camera’s “vision.” Don’t worry about the bottle for now — we’ll animate it later in this chapter.

6. Drag the World Time Marker back and forth to preview the movement (this technique is known as “scrubbing”), or click on the Preview button in the Sequencer.

All your Text should now be flying into position.

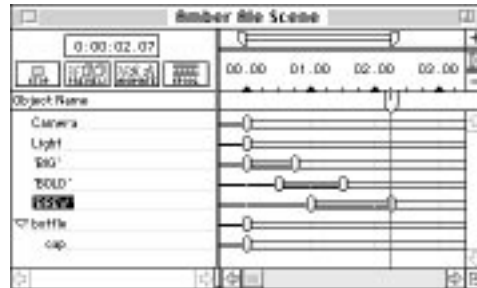
## SMOOTHING THE TEXT ANIMATION

You will notice that the “BIG” object moves much faster than the “BREW” object because it is moving over a shorter amount of time. Since Infini-D’s Sequencer is event-based (as opposed to keyframe-based), this is easily changed.

1. Hold the CONTROL key and drag the first eventmark for the “BOLD” object to 0:00:00.15 (0.5 seconds).  
This makes the “BOLD” object start its movement later and move faster, since it is moving over a shorter period of time.
2. Hold the CONTROL key and drag the first eventmark for the “BREW” object to 0:00:01.00 (1.0 seconds).



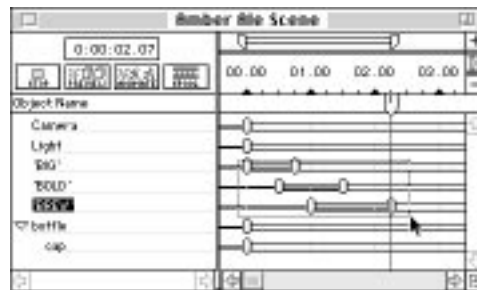
3. Preview the animation again. You should see the text appear one word at a time, at similar speeds.



The timelines for the text in the Sequencer should look roughly like this.

You may also notice that the text comes to an abrupt stop at the end of its movement — abrupt, jerky motion is the bane of every animator. This can be easily adjusted using Infini-D's "Smooth Velocity" Animation Assistant.

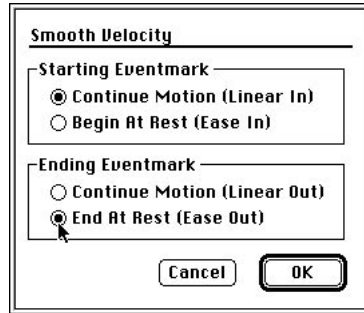
1. In the Sequencer, drag a marquee around all of the eventmarks for all three text objects, or hold down the SHIFT key and select each individually.



Drag a marquee around the desired eventmarks to select them.

2. Choose Animation Assistants from the ANIMATION menu, and select Smooth Velocity from the sub-menu.

3. Click on the radio button next to **Ease Out**.



Choose **Ease Out** to make the objects slow down before coming to a stop.

4. Click **OK**.
5. Preview your animation.

Your text should now be moving at full speed, before slowing to a smooth stop. You will also notice that the bars connecting the eventmarks are now purple with wavy lines through them. This indicates that spline-based smoothing is taking place between the eventmarks it connects.

## ANIMATING THE BOTTLE

Now that we have the text animating correctly, we want to make the bottle move. We'll use a variation on the "backward" technique here as well. Before doing anything, though, you must make the bottle and cap visible using the same procedure as described in the beginning of this chapter.

1. Open the **Object Floater (COMMAND-2)** and select the bottle.
2. Check the box next to **"Visible"** to show the bottle.
3. Do the same thing for the cap.

Once that's done, you'll place the bottle where it will be at the end of the animation.

1. Move the World Time Marker to the 3.0 second mark.
2. With the Right view window active, zoom out until you can see all of the elements in the scene, including the bottle.
3. With the V-plane tool, select the bottle and drag the bottle to the left until it is situated in between the text objects and the camera.



Drag the bottle so it is between the text and the camera.

You should notice that the bottle does not fully fit in the Camera view. This is a good opportunity to make the camera zoom out, in order to get the whole bottle in the picture.

1. With the World Time Marker set at 3.0 seconds, select the Camera object from the list in Sequencer.

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*As your scenes and animations become more complex, you will find it is easiest to select your objects from the Sequencer, instead of clicking on them in the view windows.*

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2. Choose Edit Camera from the MODEL menu.
3. Enter 35 in the box for Focal Length.

Now the camera view should show you everything in the scene. Since we only want this zoom to happen at the very end, you need to copy the first eventmark and move it to a later point in the animation.

4. In the Sequencer, select the first eventmark for the camera.
5. While holding down the OPTION key, drag a copy of the eventmark to 0:00:02.07 (2.25 seconds).

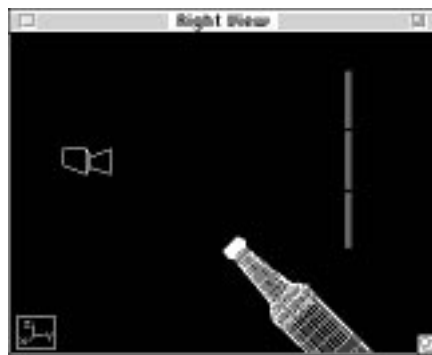
Now the focal length will stay fixed as the text flies in; then you'll zoom out as the bottle comes in. Let's finish with the bottle.

1. Move the World Time Marker to 0:00:02.15 (2 seconds and 15 frames, or 2 1/2 seconds).
2. Make the Right view active.
3. Move the bottle down, so that the top is about even with the bottom of "BOLD" object.



Drag the bottle to just below the text.

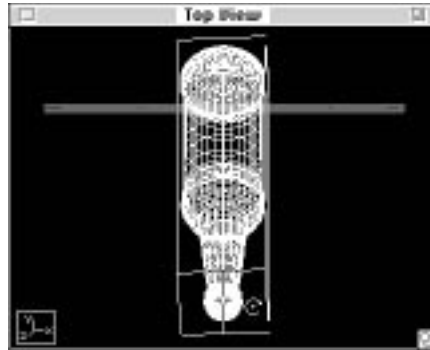
4. Select the Rotate Around tool (bottom Rotation tool), and rotate the top of the bottle about 45° toward the camera.



Rotate the bottle so the cap will be partially visible in the Camera view.

This gives us a little peek at the cap as it flies up.

5. Use the V-Plane tool to move the bottle down just enough so that it's out of the camera's view.
6. Select the Rotate Around tool (bottom rotation tool) again.  
Using the Top View window, press the SHIFT key, click on the top of the bottle cap, and drag to rotate it about 90° around its own vertical axis.

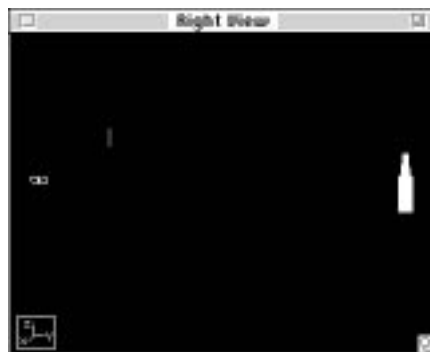


Hold the SHIFT key while dragging on the bottle cap in the Top view, to rotate around the bottle's vertical axis.

This will give the bottle a nice spin as it flies up.

7. Continuing with our "backward" animation, move the World Time Marker to time 0 at the beginning of the sequence.
8. In the Right View window, press the OPTION key and click once or twice with the Zoom tool to show even more of the scene.
9. With the V-Plane tool, drag the bottle to the far right of the Right View window.  
(Its Y-position value in the Object Floater should be roughly 40.0 inches.)

This will make the bottle come flying in from far away.



10. Finally, drag the World Time Marker to one second. Use any of the Rotation tools and rotate the bottle in a random fashion.

This rotation will make the bottle “tumble” as it zooms in from the distance.

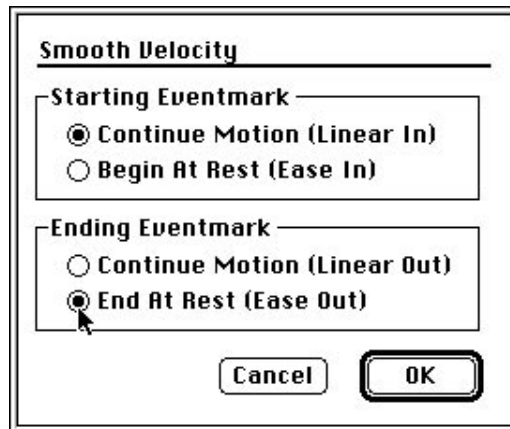
11. Click on the Camera View window to make it active, and preview your animation by clicking the Preview button in the Sequencer, or by pressing COMMAND-R.

You should now have an animation with text flying in from the edges while the bottle tumbles in from a distance and then spins up in front of the text.

## SMOOTHING THE BOTTLE ANIMATION

The final step will be to smooth out the motion of the bottle, just as we did with the text.

1. Select all of the bottle’s eventmarks, either by dragging a marquee around them or by holding the COMMAND key and double-clicking on the bottle’s name in the Sequencer.
2. From the ANIMATION menu, choose the Animation Assistant sub-menu and select Smooth Velocity.
3. Click on the button next to Ease Out, and click OK to exit the dialog box.



4. Preview the animation again.

Now is a good time to save your scene.

That takes care of the animation for the objects in your scene. The next chapter will show you how to add a backdrop and set up the scene for final rendering.

# 9 Rendering the Final Animation

Now that you've finished all your hard work preparing the animation, it's just about time for you take a break while Infini-D does the rendering for you. All that is left is for you to add a background for your animation, and to choose the settings for your final rendering.

## ADDING A BACKGROUND

First, you'll bring in a background for your scene.

1. Choose Environment from the RENDER menu to open the Environment dialog box.
2. Click on the Get Image button, and use the Open dialog to locate the "Amber Background" file in the Tutorial folder. Then click OK.



3. Click Open to load the image.

- In the Environment dialog, click the check box for Background Image, and choose Amber Background from the pop-up list.
- Choose Scale To Fit from the Alignment pop-up menu.



Use the Environment dialog box to set the background image.

- Click OK to accept the changes.

The Amber Ale background should now appear behind your objects in the Camera view window.



The background image automatically appears behind all of the objects in your scene.

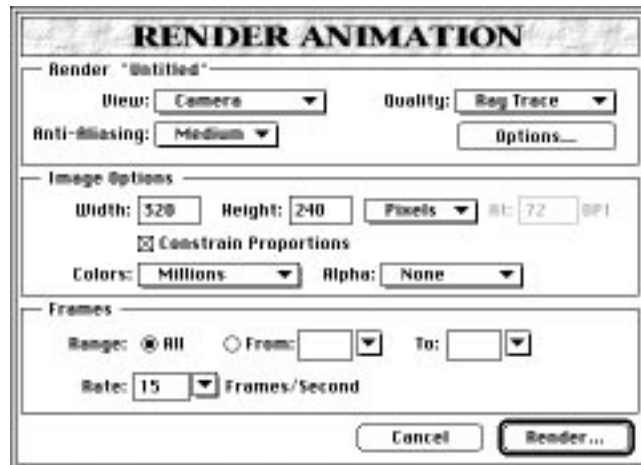


## RENDERING TIMES

Now it's time to render out your final animation. Please note that the rendering time will vary, depending on what kind of Macintosh you have. If you are running Infini-D on an 68040 or slower processor, you may want to render using Best shading instead of ray tracing. Keep in mind that higher quality rendering modes, higher anti-aliasing, and larger window sizes all increase rendering times.

## SETTING UP THE FINAL RENDERING

1. Choose Render from the FILE menu, and select Animation from the sub-menu.



2. From the View pop-up, make sure Camera is selected.
3. Click on the Rendering Options button.  
Reflections should be checked with a Depth of 2, and Transparency should be checked with a Depth of 5. Set the Patch Detail to Medium. (If your monitor displays 256 colors or less, you should enable dithering. Shadows are up to you, but they will significantly lengthen your rendering time.) Click OK.
4. From the Quality pop-up, choose Ray Trace (or another if you wish). Set the Anti-aliasing level to Low.
5. In the width field, enter 320.  
The height field should automatically change to 240. If it does not, uncheck the Constrain Proportions checkbox and set the height to 240.

This value represents the size of the animation in pixels. A regular 13" or 14" Macintosh monitor is 640x480, so 320x240 is a quarter-screen rendering. This is the perfect size to check out your renderings. Quarter-screen movies will render much faster and they will play back much smoother on your Mac than full-screen movies will.

**6. Make sure that the "All" radio button is checked next to "Frames."**

**7. In the Rate field, enter 15 frames per second.**

Again, this is a good frame rate to check your animation. For final quality rendering, particularly for output to video, you would render at 30 frames per second.

**8. Click the Render button, or press ENTER to accept the animation settings.**

**9. A standard Save dialog box will appear with a pop-up for the type of output desired.**

Select the QuickTime file format from the Save As pop-up menu, and enter a name like "Amber Ale Animation."

**10. Click on the Options button to access the choices for your QuickTime compression.**

The top pop-up menu contains several available compression methods, ranging from "None," which performs no compression, to "Cinepak," which is the standard for most CD-ROM animations. The bottom pop-up is where you choose the color depth for your animation. The default setting is the "Animation" compressor with Millions of Colors.

**11. After choosing your QuickTime options, click OK, then name your animation "Amber Ale Animation" (or whatever you like) and click on Save.**

Each frame of your animation is now being rendered. When it has finished, you can play it using a QuickTime viewing program, such as Peter's Player, which comes with Infini-D.

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*Well, that's it for your first of many Infini-D animations. Now you should be ready to try creating something on your own! Please feel free to experiment — some of the techniques shown in this manual came about because animators like you figured out a better way to do things. And when you find something new, let us know, so we can pass it on to other users and continue to improve Infini-D.*

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