2

Ray Dream 3D Overview

Introduction

This chapter introduces some of the major features and concepts of Ray Dream 3D.

With Ray Dream 3D you can create dazzling 3D illustrations in five easy steps:

- Build true three-dimensional objects with easy-to-use, intuitive modeling tools
- Paint colors and textures on your objects, giving them realistic properties like transparency and reflection
- Arrange your objects together in a scene
- Light your scene to enhance realism and depth

- Render your scene with Ray Dream 3D's acclaimed ray-tracing engine to produce extraordinary, photorealistic illustrations or animations.

Ray Dream 3D combines power with an easy-to-use, intuitive interface. It provides all the features necessary to create full-color 3D illustrations and animations.

Ray Dream 3D's modelers use many of the tools standard to 2D drawing programs and feature a variety time saving utilities and tools to make creating complex spline-based and polymesh objects quick and easy.

Ray Dream 3D features state-of the-art shading technology, which lets you apply colors and surface textures to your objects.You can even paint directly on a 3D object with shaders that emulate wood grain or marble, or with effects like bump, transparency and reflection.

The Ray Dream 3D workspace is like a photographer's studio. You can position multiple light sources and cameras, and shift between cameras to gain different perspectives on your work. You can also use the Scene Wizard to guiding you through the process of creating 3D scenes.

When you've created all the objects in your scene, you can use the easy-to-use features of the **Time Line** window to create key frames for animations.

When your scene is completed, you can render it. Rendering is the process of capturing a two-dimensional image, like a photograph, from your three-dimensional scene. You can also render your key frames as an animation.

Ray Dream 3D's rendered images are compatible with popular Macintosh and Windows 2D graphics and page-layout programs. You'll have no trouble compositing renderings with other images or integrating text with your artwork.

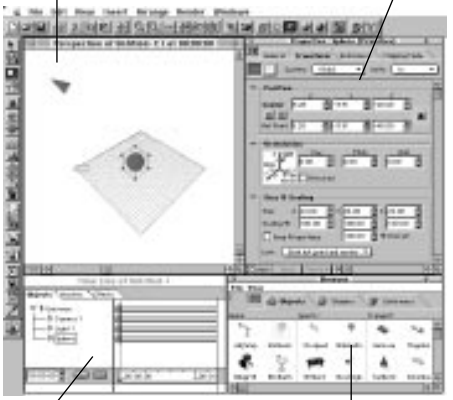
Application Overview

What is a Scene?

A Ray Dream 3D document is called a scene. A scene is the collection of objects, light sources, and cameras, saved together in a file. Each new scene has two windows—the **Perspective** window and the **Time Line** window.

Ray Dream 3D Windows

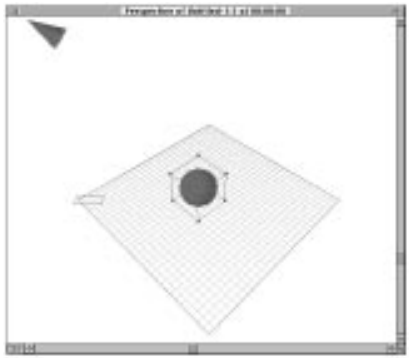
When the application opens for the first time, you see Ray Dream 3D's four main interface elements: **Perspective** window, **Time Line** window, **Browser** palette, and the **Properties** palette. These are the primary work areas. The four elements are described here, but instructions for working in them appear in subsequent chapters.



Ray Dream 3D's main interface elements.

Perspective Window

The **Perspective** window shows a view of the 3D workspace, where objects, lights and cameras are arranged to create a scene. The workspace itself is called the universe.



The Perspective window displays a view of all the objects in your scene.

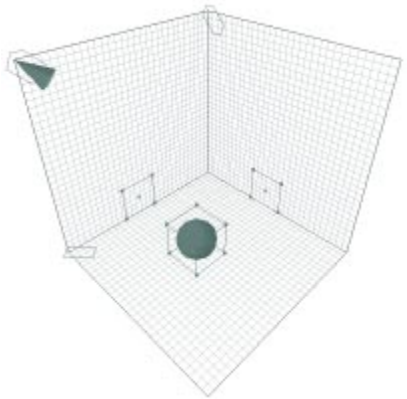
The view of your scene shown in the **Perspective** window is taken through a camera. You can move this camera to see different views of your scene or you can add other cameras to get other viewpoints.

The current zoom ratio (1:1, 2:1, etc.…) is shown in the lower left of the window. The status (Idle, Drawing, Shading, etc.) of the application is displayed in the status bar.

Note: If you hide the status bar, using the **View menu▸ Status Bar** command, it becomes part of the **Perspective** window, otherwise it remains a separate window.

Working Box

The main area of the **Perspective** window is called the **Working Box**. The Working Box is represented by three intersecting planes. It provides a framework that helps you work in a three-dimensional universe with two-dimensional devices—the mouse and monitor.



The Working Box is made up of three grids which represent the X, Y and Z axes.

Each plane of the working box has a grid. Each grid represents an axis in three dimensional space: X, Y and Z.

When you're arranging objects you'll need a specific plane to act as a reference. This plane is referred to as the *active plane* and is displayed in light green. The **active plane** is the plane of reference for many arranging operations, like moving and aligning.

You can hide or display the grids using the **Display Plane** tool. By default the **Display Plane** tool appears on the left side of the screen beneath the main toolbar. Planes that are visible in the **Perspective** window are shown in dark gray. Invisible planes are white.

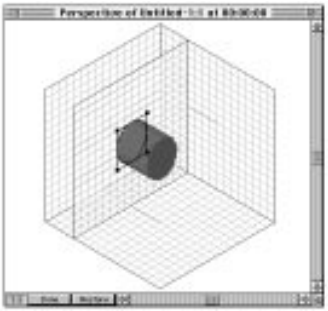
Use the Display Plane tool to set which Working Box planes are visible in the Perspective window.

Modeling Windows

The **Perspective** window is where you arrange and view your scene. To create the objects that go into the scene you'll use the Free Form modeler.

When you "Jump Into" an object by double-clicking it, the **Perspective** window "zooms in" on the object (to the exclusion of other

objects). The menus change to display the modeler's menu, and the **Perspective** toolbox changes to the **Modeler** toolbox.



The Free Form modeling window is used to create Free Form objects.

The modeling and **Perspective** windows look similar but there are a few ways you can tell which window you're in:

- In the **Perspective** window all the objects in your scene are visible. In a modeler only the object you're modeling is visisble
- In the modelers, the **Done** button appears at the bottom of the window.
- Many of the tools in the **Perspective** window, like the camera, lights and object creation tools are not visible in the modeling windows

Object Preview

The **Perspective** window has six modes for displaying your objects:

- No Preview
- Bounding Box
- Wireframe
- Preview (Fast)
- Shaded Preview (Gouraud)
- Better Preview (Phong)

Better Preview mode shows details of the shape and color of your objects, but takes longer to calculate and draw. To increase application efficiency, you might want to work in **Wireframe** or **Preview** mode at the outset of a project, then switch to **Better Preview** mode as specific details become important.

You can also use **View menu▸ Objects Invisible** to make selected objects invisible. Invisible object(s) are still listed in the **Time Line** window where their names are italicized.

Time Line Window

The **Time Line** window shows a logical (as opposed to visual) representation of the scene. All objects, cameras, and lights that you bring into the universe are listed in the Objects panel of the **Time Line**.

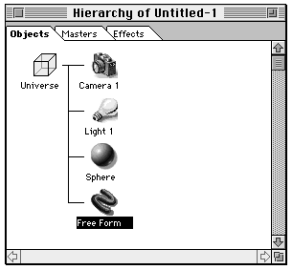
The **Time Line** window provides certain information on the scene's construction that is not immediately apparent in the **Perspective** window; for example, how several elements may be grouped.

The **Time Line** window has two modes: Time Line and Hierarchy. When in Time Line mode, the window displays the events, transition and length of your animation. This mode gives you control the events in your animation.

The Time Line window in Time Line mode. The Time Line mode is used to set the position of key frames in your animation.

In Hierarchy mode, the window displays all the elements in your scene as icons. This mode provides a graphic display of how elements are grouped and linked.

The **Perspective** and **Time Line** windows are synchronized. As you add or remove objects from one, the display in the other updates automatically.



The Time Line window in Hierarchy mode. The Hierarchy mode is used to see a graphical representation of the groups and links in your scene.

As well, any object selected in the **Hierarchy** window is also selected in the **Perspective** window. When you're working with complex scenes, you might find it easier to select small or hidden objects in the **Time Line** rather than in the **Perspective** window.

The **Time Line** window has 3 separate tabs: **Objects**, **Masters**, and **Effects**. Use the tabs at the top of the window to switch back and forth.

- The **Objects** tab displays all of the objects in your scene.
- The **Masters** tab displays only Master objects. You use the **Masters** panel to manage multiple copies of a single object. When you duplicate a single object you create a class of objects that are linked to the Master object. To edit an individual copy, select it in the **Objects** tab. To make a change to all copies of the object, select the Master object in the **Masters** tab.
- The **Effects** tab shows any **Render Effects** that you've added to your scene.

For more information about the Master objects, refer to Chapter 11, "Building a Scene."

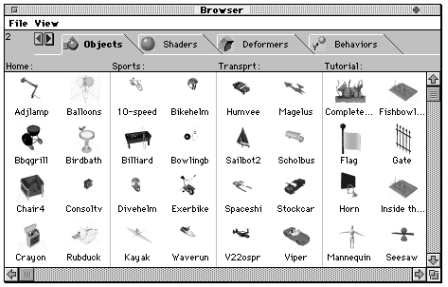
The Browser Palette

The **Browser** palette is a visual catalog of all the elements you can use to create a scene. The **Browser** palette has eight tabs, each for a different category of element:

- Shaders
- Objects
- Lights
- Cameras
- Behaviors

You can retrieve any item by dragging it out of the **Browser** palette and into either the **Time Line** or **Perspective** windows.

Each tab can display a multiple number of directories. You can use the **Browser** palette commands to add and remove directories. You can also add some items from the **Time Line** window or the **Properties** palette by dragging them directly into the **Browser** palette.



The Browser palette, showing the Objects tab. The Browser palette is used to store a variety of scene elements.

You can view **Browser** palette items by small icon, large icon, or text using the **Browser palette: View menu▸** commands.

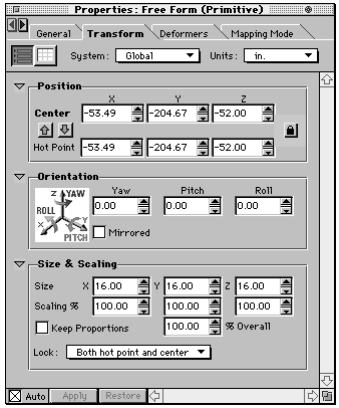
Double-clicking a **Shader** or **Behavior** tab in the **Browser** palette opens the item in a Browser document window.

Objects, **Lights** and **Cameras** are stored in standard Ray Dream (RDD) document files. When you double-click them in the **Browser** palette, its document file is opened in the **Perspective** window.

For more on the using the **Browser** palette, refer to "Using the Browser Palette" on page 28.

Properties Palette

The **Properties** palette is a dynamic palette that displays the properties of any element selected in the **Perspective** or **Time Line** windows.



The Properties palette controls and data update for each scene item you select.

The controls available in the **Properties** palette change as you select different items:

- When you select an object in the **Perspective** window, the palette displays controls to change the object's name, position, shading, behaviors, and rendering settings.
- When you select a light, the palette displays the light's properties and controls for changing the light type, color and other properties.
- When you select a camera, the palette displays the camera's name, position and camera type properties.
- When you select a point in the **Free Form** modeler, the palette displays the point's position and angle.

Toolbars

Ray Dream 3D's toolbars provide quick access to many of Ray Dream 3D's frequently used commands and functions.

There are eight different toolbars available in Ray Dream 3D:

- Standard
- Zoom
- Rendering
- Time Controller
- Status
- Tools
- Planes
- Internet

You can use the **Toolbar** dialog, available from the **View menu▸ Toolbars**, to choose which toolbars you want displayed.

The tools available in the **Tools** toolbar change as you switch between the **Perspective**, **Time Line** and **Free Form** windows.

Toolbars can be docked along the top, bottom, left, or right edge of the screen. They can also be undocked as floating palettes.

The Time Controller toolbar as floating palette. Use this toolbar to preview your animation.

Workspace Preferences

As you work, you can resize windows, move them around your screen and customize your workspace. When you quit, Ray Dream 3D remembers your settings and uses them the next time you launch the application.

If you like, you can save different workspace layouts in configuration profiles, which you can load at any time.

For more information on saving workspace settings, refer to "Setting up your Workspace" on page 25.

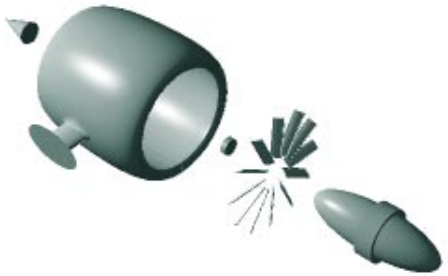
Starting to Think in 3D

Whether you're used to working with 2D illustration applications, or using a 3D illustration application for the first time,

there are several things you should consider when creating 3D illustrations. The scene you create and the objects you use to populate it are all in 3D, meaning that you need to consider how your scene will look in all three dimensions.

When you look at a real-world object. You may think it's structurally complex. Its shapes curve, twist, join, and separate in ways that may seem impossible to recreate in a computer art program but Ray Dream 3D makes constructing such objects easy. You build them one piece at a time.

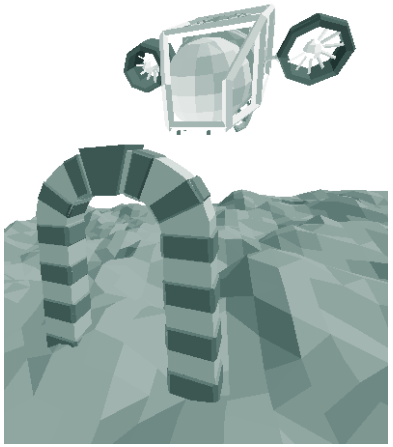
Before beginning a complex object, examine it for its components. Keeping in mind the way Studio's modeling tools work, divide the object into simple elements. For example, you can "disassemble" a mini-sub engine into the engine housing, the blades, and motor.



You can disassemble a mini-sub engine into simple elements, which can be modeled separately.

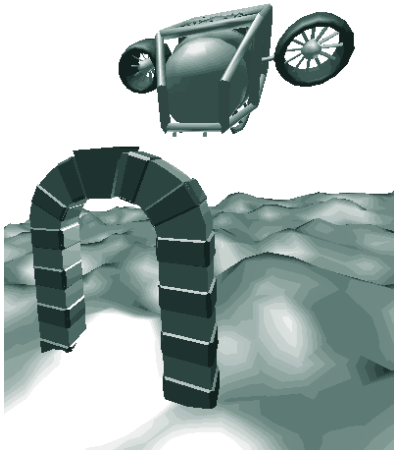
In Ray Dream 3D, it's easy to model each of these components separately. Then, using the positioning and alignment tools in the **Perspective** window, you can assemble the pieces into the mini-sub.

When a subassembly is built, like the sub engine, you can group the components. Grouping lets you manipulate the subassembly as a single object. Working in this way, there's no limit to the complexity of objects you can build. Finish the mini-sub, place it under water, add a terrain and some ruins, and you've built an underwater scene.



Underwater scene created by assembling a mini-sub and adding terrain and ruins.

You can shade the different objects to describe their surfaces. Shading involves not only color but also textures, like gravel on a sea floor, and surface properties, like shininess.



Underwater scene with shading applied.

To enhance realism and three-dimensional effects, you can add light sources to your scene. In fact, lighting is necessary for the same reasons it's required in photography—nothing can be seen without it. With different lighting, the underwater scene can change from a shallow algae-filled lake to the murky depths of the ocean.

In the lake, the lighting is bright green and comes from overhead. The shadows are short, directly beneath the objects. In the

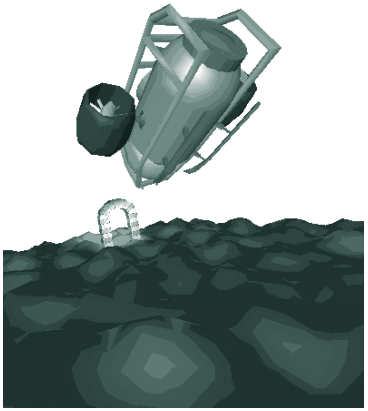
Underwater scene with lights added.

murky depths, the light is fainter, and dark blue.The mini-sub's spotlights create high contrast shadows on the ruins.

Because you're working in three dimensions, you can view your scene from any angle and at any degree of magnification. In Ray Dream 3D, you can get different views by simply placing cameras at different positions in your three-dimensional workspace.

For example, you can view your scene as if you were looking down from the surface.

You can also view the scene from below, or show it from the view of a diver on the sea floor watching the mini-sub glide by. It's the same scene, but what appears in the window depends entirely on the viewpoint you select.



Diver's view of scene.

After you decide on the best viewpoint, you'll render the scene. Rendering is the culmination of a Ray Dream 3D project. Rendering is like taking a photograph. It reduces your three-dimensional scene to a two-dimensional image. The rendered image, which can have a much higher resolution than can be seen on the screen, can be printed directly from Ray Dream 3D or opened in virtually any Macintosh or Windows graphics application.

The final rendered image.

If the rendering doesn't turn out quite right, you can always go back into your scene and adjust the viewpoint, lighting, shading, or even the shape of objects. Then, simply take another rendering.