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# The Project Designer

The Project Designer is the "main", or controlling window of Renderize Live. This window controls the management and assembly of project resources into renderable views. Object, light and camera resources are displayed and re-positioned as wireframes in the Project Designer viewport to define their spatial relationships. The view in the viewport can then be rendered according to the material characteristics that were assigned to each object.

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## What is a Project?

A project is a savable set of information that organizes all the resources needed to perform one or more renderings. A project usually contains one or more views. A view is a collection and arrangement of object and light resources viewed as if through a selected camera lens. The characteristics of the objects in a view is influenced by the use of material and image resources.

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# The Project Designer Window Layout

The Project Designer contains several different areas that control the management and assembly of project resources. Each of these areas is discussed in detail later in this chapter.

## The Menu Bar

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Located at the top of the Project Designer are five pop-down menus: File, Edit, Toolboxes, Options and Help.

## The Command Bar

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Located below the Menu Bar, the Command Bar contains buttons that control the loading and saving of projects as well as the display of Toolboxes and the viewport.

## The Viewport

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Floating in the area below the Toolbox, the viewport displays wireframes of objects, lights and the camera in 3D space. When an image is rendered to screen, it is also displayed in the viewport.

## The Resource Manager

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Located to the left of the viewport, the Resource Manager is used to catalogue and manipulate project resources.

## The Toolboxes

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The Toolboxes are displayed directly below the Command Bar. There are 5 different Toolboxes: Render, Move, Select, Normals and Colors.

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# Introduction to Project Resources

A project is made up of the following resources: views, objects lights, materials and images. These resources are the building blocks from which renderings are created.

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## Resource Types

Views are the renderable resource in Renderize Live. A view is made up of objects and lights, and includes information for a camera orientation and focal length. A view can also include an image as a background, and has settings for the alteration of ambient light and depth perception. The Creating Views section later in this chapter explains how resources are combined into views for rendering.

Objects are the rendered resource. They are 3D wireframe models imported into Renderize Live using the Load Object command on the File menu. The way in which objects appear when rendered depends on the attributes defined for the object, as well as the material resource that is assigned.

Lights define the illumination of objects in a view. The position, orientation and intensity of the lights, to name a few factors, affect the way a view appears when it is rendered.

Materials are assigned to objects, or parts of objects, to define the way the wireframe object will appear when it is rendered in a view. Materials properties include color, reflectivity, and transparency; in addition, materials can include images to define texture maps for rendered objects.

Images are assigned to materials to define texture and reflection maps for objects. In addition, images can be loaded as backgrounds in views.

Movies are animations saved in the AVI or FLC format, or as a sequence of still frame images. Movies can be used wherever images are used, and can be part of an animation.

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## Resource Icons

All resources are represented in Renderize Live as "postage stamp" icons: each visually describes the type of resource it represents, and in many cases the icon will update to reflect changes in the definition of the resource. Resource icons are displayed in Resource Palettes on the Resource Manager.

There are several ways to manipulate a resource:

- Drag a resource icon and drop it into a Command Well on the Resource Manager, or into a Resource Well located on a Toolbox or Resource Designer window. To "drag and drop" a resource, move the on-screen pointer to cover that resource's postage stamp icon, then select and hold the left mouse button to pick up that resource. Now as you move the pointer, the resource icon moves along with it: position it so that the pointer covers the desired target Wells, then release the mouse button to drop that resource icon into the Well.

- Use the resource pop-down menu. To display a menu for a resource, cover that resource icon with the pointer, then select and hold the right mouse button: a pop-down menu will appear at that position. Some commands are common to all resources, but other commands only appear for specific resource types. The specific commands are described in the Renderize Live Overview chapter.

## Default Resources

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When you execute Renderize Live, no object or image resources exist: these resources must be loaded from disk. However, Renderize Live contains "default" resources for views, lights and materials. These default resources give you a starting point when you wish to create a new view, light or material.

Default resources cannot be changed. Therefore, when you load one of these resources for manipulation, Renderize Live automatically copies that resource to a new name "default\_1". This new resource can be used to define the desired view, light or material characteristics, then it can be saved either under the system generated name of "default\_1", or you can assign a name that better describes the nature of the resource you are working with.

## Editing Project Resources

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All resources are edited in Resource Designer windows. A different Resource Designer exists for each of the six different resource types: views, objects, lights, materials, images and animations.

To edit a resource, you must load that resource into its Resource Designer window. There are several ways to open Resource Designer windows:

- Drag the resource that you wish to alter and drop it into the Edit Well on the Resource Manager: this opens the appropriate resource Designer window and puts that resource in the window. For example, if you drag a material icon from the Material Resource Palette and drop it into the Edit Well, the Material Designer window is opened and the material you dragged is loaded into the window.
- Select on the icon of the resource that you wish to alter with the right mouse button to display the resource menu, then highlight the Edit option from that menu and release the mouse button.
- Select the desired Resource Designer window from the Edit pop-down menu on the Menu Bar at the top of the Project Designer, then drag the desired resource and drop it into the Current Resource Well on the Resource Designer window.

Note that more than one Resource Designer Window can be opened at one time. You can continue to work in the Project Designer while other windows are open. The use of each of the Resource Designer windows is discussed in subsequent chapters.

## Turning Resources Off and On

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Project resources can be "turned off" in Renderize Live so that when a view is rendered, these resources will not be rendered. It is useful to disable resources in this way to speed rendering during the iterative design process. For example, when you are perfecting the material definition on one object, you can turn off all the other objects in the view, or if you are concentrating on shadow location, you can turn off all the materials in the view.

To turn a resource off, move the pointer to cover that resource in the Resource Palette and press the right mouse button to display an icon menu, then select the Off option from that menu: the word "OFF" now appears on that resource icon. When a resource is turned off, it behaves as if it isn't in the current project, but it can be turned back on by selecting the On option from the same icon menu.

Resources can also be turned off and on globally by selecting on the resource pop-down button directly above the Resource Palette. For example, if the Object Resource Palette is currently displayed in the Resource Manager, pop-down on the Objects pop-down button and choose the Turn All Off option. This way you can turn all of a particular resource type off, then selectively turn on only those resources that you wish to work with at a given time.

Resources that have been turned off can also be removed from the current project by selecting the Delete OFF Items command on the Files pop-down menu. Once a resource is deleted, it cannot be recovered.

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# Creating and Manipulating Views

The purpose of Renderize Live is to create and render views. A view is defined as a group of objects (wireframe models) positioned in 3D space, illuminated by one or more lights, and displayed according to a camera setting.

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## Adding Lights and Objects to a View

A view is created by populating it with object and light resources. When an object or light resource is part of the current view, the name of that resource is highlighted in yellow.

Before a view can be rendered, it must contain at least one object and one light. There are several ways to populate a view.

- Drag a view resource and drop it into the Edit Well on the Resource Manager to open the View Designer window, then add the desired object and light resources by dragging and dropping them into the Add Well on the View Designer.
- Drag a view resource from the View Resource Palette on the Resource Manager and drop it into the View Well. This is now the active View in the viewport (or select on the view icon with the right mouse button and select the Activate option to load that view into the View Well) Next, drag the desired objects and lights from their respective Resource Palettes and drop them into the View Well on top of the view (or select on the object or light icon with the right mouse button and select the Add option to add that resource to the current view).
- You can also drag view, object and light resources and drop them directly into the Project Designer viewport: this has the same effect as dropping them into the View Well, as described above.

As soon as an object and a light exist in the current view, that view can be rendered. However, there is more to creating a view than simply populating it with objects and lights. The objects or camera may need to be repositioned to display the objects in the desired orientation; material colors and textures can be defined for the objects; the location, color, intensity and type of lights can be defined; the camera lens properties can be set. All of these factors affect the look of the rendered scene.

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## Positioning Object, Light and Camera Resources in a View

Object, light, and camera positions can be altered visually in the Project Designer viewport. However, before you manipulate a resource in the viewport, the view containing that resource must be the current view in the View Well.

Once a view is current, the objects and lights in that view, as well as the camera, can be moved and rotated independently. To manipulate a particular resource, drag that resource's icon and drop it into the Move Well on the Resource Manager (or select on the resource with the right mouse button and select the Add to View command from the

pop-down menu): the wireframe representation of that resource now appears highlighted in yellow in the viewport.

As soon as you drop a resource into the Move Well, the Move Toolbox is displayed. The commands that appear in this Toolbox allow you to move and rotate the resource in 3D space, and these commands depend in part on the kind of resource that you are manipulating. In addition to the commands on the Move Toolbox, you can use the viewport display buttons and the Zoom buttons on the Command Bar to alter the viewport display in order to facilitate the re-positioning process.

Note that in addition to manipulating resources dynamically in the viewport, you can also manipulate lights, objects and the camera in the Light, Object and View Designers, respectively, by typing in the desired cartesian coordinates.

## Positioning Lights in the Viewport

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To manipulate a light, drop that light's icon into the Move Well.

Lights resources are not visible in the camera view. They can only be seen and positioned in the Top, Front or Side views: the viewport can be toggled among these three orthogonal views and the camera view using the viewport display commands on the Command Bar. Lights are represented in the viewport as wireframes: the shape of the wireframe depends on the type of light you have selected (point, spot, or area). Lines emanate from the light icon representing the "directional" beam of the light. Although point lights have no direction (they shine light in all directions), they also include a directional beam, so this line can be used to locate the light if it gets "lost in space". The color of the beam turns from yellow to blue if the light is in front of the camera plane, creating a backlit effect.

When a light is added to a view, its default position is usually far away from the camera, and therefore hard to locate. To find a light, you can center it in the view, or set the target of the directional beam in the view so that the location is known.

Refer to the section below titled The Move Toolbox for a complete description of the commands that are used to manipulate a light in the viewport.

## Positioning Objects in the Viewport

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To manipulate an object, drop that object's icon into the Move Well.

Objects should be manipulated using all of the viewport views. The camera view displays the view as it will be rendered; however, because the computer monitor is a 2D display area, it is difficult to get a sense of the relative depth-positions of objects when looking the camera view. Use the orthographic viewport displays to look at the view from other angles.

When an object is added to a view, it assumes a position in 3D space according to the scale and orientation that were assigned to it when it was created in the modeling software. Therefore it is often the case that when an object is loaded, it is located somewhere outside of the camera view. To view the object you may need to center it in

the camera view, or center the camera at the object's location. These commands are found in the Move Toolbox, discussed at length later in this chapter.

## Manipulating "Parent" and "Child" Objects

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Renderize Live allows you to import DXF and SHP files such that a different object is created for each layer or block in the incoming file, and these objects are related to one-another through a common "parent, or "node" object. In addition, any object that has multiple material definitions assigned to it (as is often the case with AI files or GED files from Visual Font) can be split up into multiple related objects according to those material definitions. Finally, the Make Parent, Attach Parent and Detach Parent commands, available by pointing to an object and holding down the right mouse button, allow you to create relationships among objects. Parentage is discussed further in the Object Designer chapter.

When you change the position, rotation or scale of a parent object, all of the children related to this parent are changed accordingly. This is extremely convenient when you wish to position all of your objects in concert. However, you can also manipulate the "child" objects independently of the parent, to change the spatial relationship between the parent and child.

## Manipulating Instanced (Cloned) Objects

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3D objects can be duplicated in Renderize Live either by copying or cloning (copying and cloning are discussed in full in the Object Designer chapter). If you clone an object, no additional icon is created to represent that object. Instead it is manipulated using the icon representing the object from which the clone was created. To manipulate clones of an object, you must select those instances. To do so, load the desired object into the Move Well to highlight the "first" in the series of clones. Now each time you click on the object in the Move Well the "next" clone of the current object will be selected and highlighted in yellow.

## Positioning the Camera in the Viewport

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To manipulate the camera, drop the view icon into the Move Well. When you manipulate the camera position from the camera view, you will see the objects panning in the viewport as the camera is moved or rotated. When you manipulate the camera in the orthographic views, you will see a wireframe icon of the camera, as well as lines emanating from the camera which indicate the field of view.

## Rendering Views

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Once a view has been populated and its object, light and camera resources satisfactorily oriented in 3D space, the view can be rendered. Views are rendered in the Project Designer viewport during the iterative creation process, then rendered to disk file (usually at high resolution) once the image in the viewport achieves the desired effects. The commands in the Render Toolbox are used to perform viewport and disk file renderings. These commands are discussed later in this chapter.

## Modifying Material Relationships

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When you load an object in Renderize Live, materials are created by default and assigned to each of the objects. The relationships between materials and objects can be modified using the commands of the Select Toolbox. These commands are described later in this chapter.

## Modifying Object Normal Directions

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Object normals determine which side of a polygon will be rendered. In some cases geometry can be created such that the direction of normals is reversed, resulting in unexpected results during rendering. The direction of object normals can be modified using the commands on the Normals Toolbox. These commands are discussed later in this chapter.

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# Loading and Saving Files: An Overview

The creation of a project in Renderize Live involves the use of a variety of different files. Object files, containing wireframe models, are created in 2D Drawing and 3D modeling products and loaded into Renderize Live from the AI, DXF, GED, OBJ, SHP and STL file formats. Image files, used as material textures or view backgrounds, can be loaded from and saved to the BMP, GIF, JPG, RAS, RAW, RGB, TGA or TIF file formats. Project files, with the EYE file format, contain a list of all of the resources associated with a given project. The loading and saving of each of these file types is discussed in full below.

All file operations are executed in Renderize Live using a Windows 3.1 File Browser. The File Browser appears anytime a file is to be loaded or saved.

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## Using the File Browser

The File Browser appears whenever a command is issued which requires loading or saving a file. To load a file, point to the desired filename on the list of filenames to highlight it, then select the OK button to load that file. Or, double-click on the desired filename on the list. You can also click in the Filename type-in, type in the desired filename and press the OK button.

To change directories, select on the desired directory name in the list of directories for the current drive. To change drives, click on the Drives pop-down menu and select from the list of valid disk drives.

### The Files List

The Files List displays a list of all files in the current directory matching the pattern (filename extension) that is displayed in the List Files of Type type-in.

### The List Files of Type Pop-down Menu

Select this pop-down menu to display a list of valid file types for the current load or save operation. For example, when you are loading an object, the list of filetypes that appear in this pop-down menu are AI and GED.

Note: When saving image files, the filename extension that appears in the Pattern type-in area will be assigned to the image filename, if no filename extension is specified in the Save this File type-in.

### The Directories List

This list displays the directories on the selected disk drive. To change directories, either select the desired directory on the list to highlight it and press the OK button, or simply double-click on the desired directory.

### The Filename Type-in

The Filename type-in permits direct entry of the filename to be loaded or saved. If you select a filename by highlighting it in the File List, that filename appears here. Otherwise, you can enter the desired filename directly using this type-in. When typing in a filename, be sure to include the filename extension.

### The Cancel Button

Closes the File Browser window and returns to the previous command level without loading or saving any file.

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## Loading and Saving Projects

A project consists of all of the light, object, view, material and image resources loaded or defined in Renderize Live at a given moment. Projects are loaded and saved under the File pop-down menu, located at the top of the Project Designer.

A Renderize Live project actually consists of a group of files. The main file, with the .EYE filename extension, contains a list of all of the resources in the project, and the attribute definitions for these resources. In addition, this file refers to object and image files that are included in the project. If you ever need to move a project to a different location, use the Export Project command to make sure that all of the relevant resources are taken into account.

When you save a project, an .EYE file is created with all of the project resources. In addition, files with a .GED filename extension are generated for each of the objects in a project, and saved into a subdirectory that is created using the project name. For example, if you save a project named TOWER, the project file TOWER.EYE is created. A directory named TOWER is also created in the same directory as the project file, and each of the object resources in the TOWER project are saved into the TOWER subdirectory. Therefore, after you import geometry and save the project file, the project no longer refers to the original geometry, but instead to the "project-specific" .GED file that it creates when the project is saved.

In addition to these object files, there may be one or more image files associated with a project. Image files are not duplicated as object files are to make them project-specific. Instead, the .EYE file references the relevant image file names and directory paths. Therefore a single image file can be referenced in multiple projects. Keep this in mind when editing image resources and saving those changes.

When you load a project, you do so by choosing the desired .EYE file. After reading the .EYE file, Renderize Live locates and loads all of the object and image files that are referenced in the project.

When a project is loaded, it is added to any resources that currently exist in Renderize Live. Therefore is it possible to combine projects simply by loading them one after the other. This offers a convenient method for creating material resources and sharing them

among projects. If you don't wish to combine projects, use the New command under the Files pop-down menu to clear away any existing projects before loading a new project.

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## Saving projects to VRML

Virtual Reality Modeling Language (VRML) is gradually becoming the standard language for describing virtual worlds used in networked environments such as the global Internet and for interactive simulations on the World Wide Web. Special VRML Viewers that are hyperlinked to Web pages are used to navigate inside these virtual environments.

VRML defines a set of 3D objects that can contain anything from 3D geometry to JPEG image files. The VRML file format is a subset of the Silicon Graphics, Inc. Open Inventor ASCII File Format and supports complete descriptions of 3D scenes with polygonally rendered objects, lighting, materials, ambient properties and realism effects as well as additional extensions to support networking.

Export your scenes to VRML as follows :

- With a project loaded select 'File / Save Project Exported' from the Menu Bar.
- When prompted, select 'As VRML file'.
- The next prompt gives you the option to embed texture maps in the VRML file or to write them out as separate files in .JPG or .GIF format.

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## Loading and Saving Objects

Objects are the shapes, or "geometry", that become the subject of our renderings. Regardless of the kind of object file that is loaded, Renderize Live saves all objects as .GED files at the time a project is saved (see the Loading and Saving Projects section above).

When an object is loaded in Renderize Live, one or more materials are assigned to that object. The object that is loaded appears on the Object Resource Palette on the Project Manager, and any materials associated with that object appear in the Material Resource Palette.

To load an object into the current project, select the File, Load Object command from the Menu Bar. You can load objects in the AI, DXF, GED, OBJ, SHP, STL or WMF file formats. If you are using the PointLine modeling software, use the File, Load Object (Directory) command, as this allows you to load all of the separate DXF files in a directory as related objects.

- AI is the Adobe Illustrator drawing file format. This 2D drawing file contains the vector shapes "shapes" that make up a drawing, and these shapes can be extruded and offset at the time they are imported, or they can be loaded as a bitmap image.

- DXF, the data exchange format, is a common format for wireframe files. Renderize Live can load DXF files from AutoCAD releases 10 and above. Materials are assigned to DXF objects during the loading process according to that object's layer, color or block information.
- GED is the Renderize Live object file format. This is the format that objects are saved into when a project is saved. Visual Font also saves extruded font files in this format. In addition, 3D objects from the Simply Scenes data libraries are saved in this file format (Simply Scenes are sold separately).
- OBJ is a Wavefront file format. Materials are assigned to OBJ objects according to a definition in the OBJ file.
- SHP is the Visual Model file format. Materials are assigned to SHP objects during the loading process according to that object's group or layer information.
- STL is a 3D model format support by ProEngineer, as well as other modeling applications.
- WMF is the Windows Metafile format. This 2D drawing file contains the vector "shapes" that make up a drawing, and these shapes can be extruded and offset at the time they are imported.

GED, OBJ and STL files are loaded directly from the Load Browser. AI, DXF, SHP and WMF files are selected in the Load Browser, but loaded according to selection in a special menu which appears after the desired file has been selected. The loading of AI, WMF, DXF and SHP files is described in detail in the following sections.

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## Loading AI and WMF Files

Two dimensional objects created in vector drawing packages can be imported into Renderize Live using the AI or WMF file formats, and extruded to create 3D objects. Vector drawing packages that have been tested include CorelDRAW!, Micrografx Designer, Deneba Systems' Canvas and Computer Support Corp.'s Arts & Letters.

The results you achieve when importing and extruding shapes from a 2D vector drawing product depends on the product you use and the file type you use. The following section provides some suggestions for loading shapes from each of the drawing packages that have been tested with Renderize Live.

The loading of AI and WMF files is very similar. However, there are some choices available with AI files that aren't available with WMF files. When you select an AI file to load into Renderize Live, the first choice you are asked to make is whether to import the drawing as a 2D or 3D object. If you select the 2D option, the drawing is imported as a bitmap image, and that image is mapped onto a flat polygon. Therefore the resulting object is a flat plane. You can move this object around in space to view it from different angles, but the object has no depth: it has not been extruded to create a 3D object.

When you load a WMF file, or when you load an AI file and select the 3D option, an Extrusion Browser appears. The selections on this Browser allow you to determine the Extrusion Depth, Curve Resolution (for AI only) and Depth Offset for the imported object.

## Extrusion Depth

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The Extrusion Depth value determines how much to extrude the 2D object in order to give it depth and make it a 3D object. The higher the Extrusion Depth value, the more depth the object will have. Because you can't see your object at the time it is being loaded, it is difficult set a meaningful value. However, the value that you set here is only an initial extrusion depth. After the file is loaded you can modify its Extrusion Depth by changing the depth scale of the object dynamically in the viewport. Unless you have changed the "Up Axis" option in the Preferences window, the depth axis for an imported file is the "Z" axis.

## Curve Resolution (AI Files Only)

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The Curve Resolution value determines how smooth curves in the incoming object will be drawn. AI objects are with "splines", or curves. However, these curves must converted to a series of straight lines in order to create a renderable 3D object. The Curve Resolution value allows us to determine how many lines make up the curve between any two nodes on that curve. The higher the value we enter here, the smoother the curves in the incoming object, but the more polygons that object will contain, making it larger and therefore affecting loading and rendering times. The appropriate Curve Resolution value depends on the level of smoothness you want, and the prominence of the object in the scene. For example, if the incoming object is going to be placed in the foreground of the view, you may wish to increase the Curve Resolution.

The default Curve Resolution is 4, which is a relatively low resolution. However, if your drawing contains a lot of freehand curves, you may not wish to set the Curve Resolution much higher.

## Depth Offset

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The Depth Offset value determines the relative depths of the different elements in the incoming 2D vector. If you are working with overlapping filled shapes, you must set a Depth Offset value greater than zero, otherwise when the 3D object is created the overlapping elements will exist on the same plane and render on top of each other, obscuring some of the elements.

The default Depth Offset value is 0.2, just enough to insure that each element exists on a different plane so that all elements will be visible when the 3D object is rendered. As you increase the Depth Offset value you are increasing the "Z" distance between each element, and therefore increasing the depth of the object as a whole. If you set a Depth Offset value greater than the Extrusion Depth value, the elements won't touch each other at all: if you were to look at the object from the side, you'd see space between each element.

The order in which elements are offset is determined by the layering of the elements at the time the file was created.

The following illustrations demonstrate the effect of the Depth Offset value when you import a drawing as a 3D object. The first illustration below displays the 2D drawing that has been created in a 2D vector drawing package.



Figure 139. *A Simple 2D Drawing*

If this drawing were imported into Renderize Live with no Depth Offset, the small rectangle and the oval would be obscured by the large rectangle. The default Depth Offset value of 0.2 would offset the elements enough so that they would all appear when the object is rendered, but still exist more or less on the same plane. The illustration below shows the drawing after it has been loaded into Renderize Live and rendered as a 3D object.

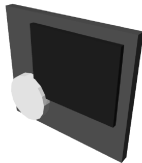


Figure 140. *The 2D Drawing Extruded and Rendered as a 3D object.*

In the rendering above, we've imported the object with an Extrusion Depth of 30 and a Depth Offset of 15. Therefore the small rectangle is embedded halfway into the large rectangle. The oval is embedded halfway into the small rectangle, and is resting on top of the large rectangle. The camera was positioned above and to the right of the object in order to better illustrate the relative depths of the different elements.

Notice that a different material is assigned to each of the elements in the 3D object when it is imported into Renderize Live, and that the default material colors for each element are the same colors that were used when the elements were created as 2D shapes!. You can modify the materials as desired to add texture and reflection maps, and to define opacity and shininess. In addition, you can split up object by material, so that each element is a separate object. This gives you additional flexibility to move elements independently and to assign different mapping types and rendering characteristics for each element.

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## Loading AI and WMF Files from Specific Drawing Products

Each product treats its drawing data differently when saving it to file in the AI or WMF formats. Following is specific information on each product that was tested. This information is certainly not definitive, and we welcome your observations.

If you are using a 2D vector drawing product is not discussed below, you will probably achieve some degree of success importing its AI and WMF files, but you should expect some issues similar to those discussed below..

Regardless of the product you are using, you should not export shapes that are filled with patterns or gradated colors. Use solid color fills only. In addition, you should not mix outlines and fills for a single shape. Use filled shapes to create solid objects defined by a closed outline. Use outline shapes for hollow objects or if you want to extrude thick lines.

When exporting text, you usually need to convert text to curves (or beziers) before exporting. In addition, each text character is a separate "layer", so you should set Depth Offset to) if you want the entire text string to exist at the same depth.

Many 2D vector Drawing packages include clipart libraries. The contents of these libraries can often be used, but they may require modification before being exported to convert shapes to curves, change pattern and gradient fills to solid color fills, remove outlines, etc.

### CorelDRAW!

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Shapes from Corel are best exported to the AI file format for importation into Renderize Live. Filled shapes, combined shapes and text all come in correctly. Text must be converted to curves during exportation. Open outline shapes come in as closed shapes. Closed outline shapes come in as "hollow" objects with extruded sides but no front or back, and the lines used to create the outline have no thickness. Therefore, we recommend that you use only solid color filled shapes when creating drawings to import into Renderize Live through AI.

Note that when you import a combined shape through AI, the left and right sides of the shape are different "layers". Therefore you should set the Depth Offset to 0 during importation; otherwise the shape will have a "fault" down the middle where each side is offset to a different depth.

Corel shapes can also be imported into Renderize Live through the WMF file format. Filled shapes come in correctly through WMF, but combined shapes and text do not: they both display fills where holes should be. However, WMF does import open or closed outline shapes with the proper line thickness. Each line segment is treated as a different "layer", so you should set your depth offset to 0 if you want the entire shape to exist at the same depth.

## Micrografx Designer

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Using the AI format, filled shapes come in correctly. Open outline shapes are closed but not filled, as are closed outline shapes with "invisible" fill. Lines are imported with no thickness, so they only exist as extruded sides in Renderize Live.

Using the WMF format, filled shapes come in correctly. Closed outline shapes are always filled, even if they have "invisible" fill attributes. Open outline shapes remain open. Line thickness is recognized and used, but each line segment is treated as a different "layer", so you should set your depth offset to 0 if you want the entire shape to exist at the same depth.

Unfortunately, neither combined shapes nor text imports well: they both display fills where holes should be.

## Canvas

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Renderize Live is only compatible with WMF files from Canvas. Filled shapes come in correctly, as do combined shapes (use the Object, Combine command). Open outline shapes are closed and filled, and closed outline shapes are filled. Open shapes and line thickness can be achieved only by using the Fountain Pen feature, but each line segment is treated as a different "layer", so you should set your depth offset to 0 if you want the entire shape to exist at the same depth. Everything should be converted to curves before outputting the WMF file.

Unfortunately, text shapes do not come in correctly: they display fills where holes should be.

## Arts and Letters

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Arts & Letters can output WMF files. Filled shapes come in correctly: closed outline shapes are always filled. Open shapes come in with line thickness, but each line segment is treated as a different "layer", so you should set your depth offset to 0 if you want the entire shape to exist at the same depth.

Unfortunately, text shapes do not come in correctly: they display fills where holes should be.

## Loading DXF Files

---

Renderize Live supports both standard ASCII and binary DXF file formats, as defined by Autodesk's DXF standards. However, when creating models for use in Renderize Live, keep the following points in mind:

- Renderize Live will read DXF files containing solid modeling entities, such as those created with the AutoCAD AME. However, you must mesh your solids (for example, use the SOLMESH command in AutoCAD) before exporting your solid model to DXF. Note: AutoCAD Release 13 integrates solids modeling and does

not contain a SOLMESH command or equivalent. At press time the only known way to output r13 solids as meshed objects in the DXF format is to save the file using the 3DSOUT command, then reload it using the 3DSIN command before saving the DXF file.

- Renderize Live only imports those layers in a DXF file that are not frozen. Renderize Live cannot load DXF files in which the highest level "0" layer has been frozen.
- Renderize Live does not properly import DXF objects created using a "donut" command.
- DXF files do not treat "voids" as special entities, and therefore the imported geometry will not contain a void at the desired location.

When a model is loaded into Renderize Live, you may specify how to break the model up into objects. A model can be loaded by layer, color or block, and the hierarchical level at which the objects are loaded can be set. For example, if a model consists of multiple layers, you can elect to load the model such that all of the layers are lumped into a single object; or you can load the model such that each of the layers in the model are treated as separate "children" objects and controlled with an additional "parent" object that maintains the spatial relationships among the children.

In addition to specifying how to generate objects from a model, you must also specify whether materials will be assigned by layer, color or block. For example, if you load materials by layer, a different material is created for each of the layers that are loaded from the model. The material definitions selected here are completely independent of the object definitions described in the previous paragraph.

## The Entities List

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On the right side of the DXF File Reader, an entities list displays the levels into which the current model is broken down. The entities that appear depend on the "Create Objects From" option that is selected. If you are creating objects by Layer, then this list displays all of the layer information for the current model.

The entities on this list that are highlighted indicate how this model will be loaded. If the "Set by level" type-in (discussed below) is set to "0", then only the top line in this window is highlighted. This line, indicating level 0, represents the model as a whole. When a model is loaded this way, only one object is created in renderize live, and it contains all of the entities of this model. If "Set by level" is "1", then all of the lines in this list representing level 0 and level 1 are highlighted, and a different object will be created in Renderize Live for each of the lines highlighted here. In this case, all of the level 1 entities contain the geometry that makes up the object: the level 0 entity contains no geometry, but acts as the "parent" of the level 1 entities. This parent object can be used in Renderize Live to manipulate the level 1 entities as a whole. This is especially important when you wish to re-orient the model in 3D space. Instead of trying to move the entire model by manipulating each of its object entities separately, you can move the "parent" object and

the position of the children (the level 1 entities) will move accordingly to preserve the spatial relationship between these entities.

If you don't wish to load all of the layers indicated here, you can point to and select on a highlighted layer to take it out of the list of entities to be loaded. If you load by level 1 and take one of the level 1 entities out of the list of entities to load, the geometry associated with that entity will be assigned to the parent entity. You can also select on the parent level (level 0) to turn it off. Then, only those objects that are selected will be read in.

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## The Set By Level Type-in

Use this type-in to determine the number of objects to create when loading the current model. Level 0 is the DXF level that represents the model in its entirety. If level 0 is chosen, only the entity at level 0 is highlighted in the entities list of the DXF File Reader, and all entities in the DXF file will load as a single object.

Levels below Level 0 represent sub-groupings of layers or blocks (depending on which "Create Objects From" option is selected). When you load objects by level 1, a different object is created in Renderize Live for each of the level 1 entities. In addition, Renderize Live generates an object that represents the model as a whole. This object, marked with the word "node", generally contains no geometry, but it can be used to globally control the sub-groupings of the model.

Using this type-in, you can determine how many entities you wish your model to be broken down into when it is loaded into Renderize Live. Regardless of the level you choose, the entire model is loaded into Renderize Live (unless you specifically exclude entities, as described in the section above titled "The Entities List"). This type-in simply allows you to load the entire model as a single object, or load it as a group of objects. When you load a single model as a group of objects, each of the objects can be manipulated independently in Renderize Live, or they can be manipulated as a whole by manipulating the "parent" object of these entities.

---

## The Material Source Buttons

The material definitions for the imported model can come from Layer, Color or Block. Selecting one of these options under the "Create Material from:" area determines how the entities of the DXF model will be grouped into materials in Renderize Live. When the DXF file is loaded, one material will be created for each of these groups. These materials will be displayed in the Material Resource Palette under the same names that defined the entities. The way you group entities for material definitions depends entirely on how the DXF file was created. The material source that you choose is completely independent of the object source. For example, it is entirely possible to load by layers but to assign materials by blocks.

---

## The Object Source Buttons

The object definitions for the imported model can come from Layer, Color or Block. Selecting one of these options under the "Create Objects From:" area determines how the

entities of the model are grouped into objects in Renderize Live. When the DXF file is loaded, objects will be created according to the group chosen here. The number of objects created depends on the "Set by level" number and the entities that are highlighted on the Entities List. Basically, one object is created for each entity that is highlighted in the Entities List.

The default setting for this command option can be set in the Renderize Live startup file. Note that frozen layers are neither displayed nor read in Renderize Live.

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### The Save Caps on Extrusion Button

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If an entity is created in the modeling software by extrusion (sometimes called 2-1/2 D models) there are often no caps on entities; that is, a square extruded into a cube has no top or bottom cover. Enabling this button caps these entities with a renderable face.

The default setting for this command option can be set in the Renderize Live startup file (discussed in the Renderize Live Interface Overview chapter).

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### The Read Views From DXF Button

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Enable this button to import DXF views and use them as view resources in Renderize Live. These view resources are displayed as icons on the View Resource Palette.

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### The Read Button

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Executes the loading of a DXF model according to the object and material definitions that you set in the DXF File Loader menu. Object and material resource icons are generated and displayed in the Resource Palettes on the Project Designer.

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### The Cancel Button

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Cancels the DXF file load command.

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## Loading an SHP File: The SHP File Reader

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SHP files are similar to DXF files in that they contain the group and layer information that was defined in the original model. This information can be used to determine how objects are broken up and materials assigned when the model is imported. The SHP File Reader is similar in functionality to the DXF File Reader. Please refer to the section above for detailed information regarding the use of the commands in this window.

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## Changing Object Geometry

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After importing model into a project, you can edit the model and re-import those changes without affecting the rest of the project.

Simply re-load the original model in your modeling application, modify the geometry as desired, and re-export that geometry (if you have modified only one layer in a large model, it might speed things up to save only that layer out. Now load this file into Renderize Live and highlight only the layer(s) that you wish to import. If you want the new geometry to continue to share the same parent as the existing geometry, do not highlight the parent layer in the file that you are importing. Finally, select Read from the DXF Browser and select the Replace option to overwrite the old geometry with the updated geometry.

---

## Loading and Saving Images

Images are used in Renderize Live as textures in material definitions and as backgrounds in views. In addition, once a view is rendered to disk in Renderize Live, that rendered view becomes an image file on disk. Renderize Live can load and save BMP, GIF, JPG, RAS, RAW, RGB, TGA and TIF files. Images can be read into Renderize Live using the Load Image command, located under the File pop-down menu, or from the File pop-down menu on the Image Designer window.

With the exception of renderings, which are saved to file at the time they are generated, images are saved from the File pop-down menu on the Image Designer window. Renderize Live can save images in a variety of bit-depths (number of colors), depending on the file being saved. The saving of image files is discussed in detail in the Image Designer Window chapter.

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## Loading Images Through the Windows Clipboard

Images can be loaded into Renderize Live directly from the Windows Clipboard. If you copy a bitmap image into the Clipboard from another Windows-based program, the Edit, Paste Image command is enabled in Renderize Live. This is the same as the Edit, Paste command that appears on the Image Designer window.

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# The Menu Bar Commands

Following is a brief description of the commands accessed from the Menu Bar.


## The File Menu

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### New

Clear all resources from the Project Designer to start fresh. This command is also executed by selecting  on the Command Bar.


### Open Project

Load a project from disk file. This loads the .EYE file that defines a project, as well as all objects and images associated with that project. This command is also executed by selecting  on the Command Bar.

### Save Project

Save the current project, updating the .EYE file, as well as any associated object files, if necessary. In addition, if any image resources have been edited but not saved, you will be asked if you wish to save them at this time.

### Save Project As

Save the current project under a new name, also saving new object files into a directory of the new project name. This command can also be executed by selecting the  button on the Command Bar.

### Save Project Exported

Save the current project so that it can be easily archived or moved to a different system. When you select this command a window appears on which you can select the filename and directory to which the file will be exported. An EYE file is created in this directory, and all of the image resources associated with the project are duplicated and saved in that directory. In addition, a subdirectory with the same name as the EYE file is created in the same directory in which the EYE file is stored, and all the object files are copied to this directory. Finally, all object and image references in the EYE file are set so that as long as the EYE and image files exist in the same directory, and the object files exist in a subdirectory of the same name as the EYE file, Renderize Live will find all resources when the project is loaded.

After using this command, you can use the XCOPY command to copy the EYE and image files, as well as the object files and their subdirectory structure to another location.

### Load Image

Load an image to include as a resource in the current project.

### Load Object

Load an object to include as a resource in the current project.

### Load Object (Directory)

Load all of the objects in the current directory. Highlight one of the files in the logged directory and select OK, and all model files in that directory that match the selected file type are loaded. This command facilitates the importation of DXF files from PointLine software.

### Load Images or Objects by Pattern

Load all of the images or objects in a directory that match the filename extension chosen in the List Files of Type type-in on the File Browser. If you select the "All Files (\*.\*)" option, all recognized image and object files will be loaded. Other files in the directory will cause error messages, but will not terminate the load process.

### Delete all Off Items

Delete all resources that have been tagged as Off.

### Mark Unused

Mark as Off any objects or lights that are not included in views, any materials that are not assigned to objects, and any images that are not used in material definitions or as view backgrounds.

### Exit

Exit Renderize Live.

## The Edit Menu





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Use the commands on this menu to open up each of the Resource Designer windows. There are Resource Designers for each of the project resources: views, objects, lights, materials and images. In addition, there is an Animation Designer window used to define and generate animations.

With the exception of the Animation Designer, Resource Designer windows can also be opened by dragging a resource and dropping it into the Edit Well on the Resource Manager, or by pointing to a resource and selecting the right mouse button to display the icon menu, then selecting the Edit option from this menu.

## The Toolbox Menu

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Use the commands on this menu to open up one of the 5 Toolboxes: Render, Move, Select, Normals and Colors. These Toolboxes can also be opened by selecting the , , , and  buttons, respectively, on the Command Bar. Each of these Toolboxes is discussed later in this chapter.

## The Options Menu






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The Options Menu allows you to define batch rendering processes, and to define Renderize Live system defaults.


## The Batch Command



When you select this command, a window appears on which multiple views can be identified for rendering.

To include a view in the batch rendering process, drag and drop that view into the Add Well in the Batch Render window. To remove a previously included view, drag that view and drop it into the Delete Well in the Batch Render window.

To set the rendering options for a particular view, first add that view to the list of views to render, then drag it and drop it into the Edit Well on the Batch Render window. Any options already set for that view in the Batch Render window will be displayed. Once the view is in the Edit Well, you can select the rendering options by selecting the , ,  and  buttons (these buttons are described in the Rendering Views section later in this chapter). You can also enter the desired output resolution and filename for each view.. Be sure that each file is assigned a unique filename, and that none of these names already exist in the directory in which the images are to be rendered. If a duplicate filename is found, the batch process will be interrupted and you will be prompted to assign a new filename or approve the replacement of the existing file. When you are done selecting the parameters for a view, select the  button to save that information for the current view.

Rendering options and parameters can also be set globally for all of the views in the batch render process. When you select the  button the current rendering options, as well as the resolution, are saved to all views currently loaded into the Batch Render window.

All views in a given batch render operation must use the same aspect ratio information. To define a batch rendering with an aspect ratio other than 4x3, load one of the the desired views into the View Well, then from the Render Toolbox select the desired aspect ratio and position the markers in the viewport to the desired location. Now open the Batch Render window and drop that view into the Edit Well. Finally, select the  button, and the aspect ratio and rendered location will be copied from the current settings on the Render Toolbox and in the viewport.

Once you have defined the views to be rendered, use the type-in area on the window to type in a directory path where you wish to save the image files as they are rendered. Select  if necessary to examine your disk's structure. When all is set, select  to begin the batch process. Results will be displayed in the status area of this window as the views are rendered.

## The Preferences Command

Select this command to open the Preferences window, in which you can view current memory usage and customize some default Renderize Live settings. The selections you make here are active until you exit the software. To save these selections to the EYES.CFG file so that they become the default options whenever you load the software, select the Save command on this window.

## File Type Options

Select the default image file type. The file type you select here will appear as the selected file type whenever you save an image. Choices here are TGA, TIF, GIF, BMP, RAW, RAS and RGB.

## Output Format Options

**Bits/Pixel:** Select the desired color depth at which image files are saved. The color depth you select here will appear as the default whenever you save an image file.

**Compress:** When this option is enabled, the Compress option will be enabled by default whenever you save an image file.


**Query on Write:** When this option is enabled you will be prompted for a pixel depth and compression setting whenever an image file is saved. When this option is enabled, the default pixel depth and compression settings will be set according to the Bit/Pixel and Compress settings in this window.


**Auto Alpha Matte:** When this option is enabled an alpha channel will be created for any images that don't already have an alpha channel defined. The alpha channel will be created based on the color value of the first (upper-left) pixel in the image.

## Drawing Options

**Up Axis:** Select the desired nomenclature for the screen coordinate system. If Up Axis is set to Y, then the Y axis runs vertical on the screen, and the Z axis represents depth. If you select Up Axis as Z, then the Z axis runs vertical on the screen, and the Y axis represents depth. The selection you make here doesn't re-orient objects in your View: it simply establishes the naming convention for the screen coordinate system.

**Max Polys:** Choose the maximum number of polygons to re-draw for an object while that object is being positioned, rotated or scaled in the Project Designer viewport. When you manipulate an object in the Project Designer viewport, the polygons that make up that object must be redrawn on the screen during manipulation (unless you are moving objects with the bounding box option enabled) to update to the object's new position. The number that is entered here determines the number of polygons that are redrawn during object manipulation: the lower the number you enter here, the fewer polygons are redrawn, and thus the more quickly this particular function will perform. However, this speed will come at the expense of object detail. The object is represented with fewer polygons, and therefore less detail is visible.

**Bounding Box:** Choose the default position for the  button on the Command Bar. When this option is enabled, the bounding box toggle is enabled by default.

**Lock Draw:** Choose the default position for the  button on the Command Bar. When this option is enabled, the lock toggle is enabled by default.

## Interface Options

**Color Popup:** Colors are defined from the Color Toolbox, located directly below the Command Bar. When this option is enabled, the Color Toolbox "floats" in a window above the Project Designer. To make the Color window appear, point to the Color Well for which

you wish to define a color and press the middle mouse button (or hold down the Shift key and press the left mouse button).

**3 Button Mouse:** Select this option, and the Renderize Live interface changes to take advantage of a 3 button mouse. All icons that control mouse functionality in the Project Designer viewport change into 3-button mouse definitions, consistent with previous versions of Renderize.

**Floating Tools:** Select this option, and the entire Toolbox area of the Renderize Live interface floats in a separate window.

**Floating Resources:** Select this option, and the entire Resource Manager area of the Renderize Live interface floats in a separate window which displays all Resource Palettes simultaneously.

#### Message Prompts

The selection you make here determines in which situations Renderize Live will write messages to the screen. Messages appear whenever the execution of a command may be mitigated by external circumstances. There are four levels of message prompts: All, Most, Some and None.

#### Confirm Prompts

The selection you make here determines in which situations Renderize Live will ask you to confirm you command selections. Confirmations appear whenever you are about to do something that could result in lost work. For example, when you exit Renderize Live, you are asked to confirm your intentions. There are four levels of confirm prompts: All, Most, Some and None.

#### The Save Button

Save the current Preference settings to disk file. When you select this button, the current Renderize Live default Preferences are saved to a file called EYES.CFG located in the \SIMPLY3D\EYESEZ\CONFIG directory. Whenever you launch Renderize Live, the program reads the configuration information in the eyes.cfg file, and sets the Preferences accordingly.

#### The Help Menu

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Access on-line Help, or learn about the current release of Renderize Live.

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# The Command Bar

The buttons on the Command Bar control much of the display on the Project Designer. They are grouped for discussion below, based on their functionality.

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## The Project File Buttons

These buttons are used to manage projects.



The New Project Button clears any existing work from the Project Designer, so that you may begin fresh with a new project. This is the same as selecting File, New from the Menu Bar.



The Open Project Button loads a project from disk file. This is the same as selecting File, Open Project from the Menu Bar.



The Save Project Button saves the current file to disk. This is the same as selecting File, Save Project on the Menu Bar.

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## The Toolbox Buttons

These buttons are used to open the Toolboxes, displayed below the Command Bar. Only one of these buttons can be selected at a given time, because only one Toolbox can be displayed at a time.



The Render Toolbox button displays the Render Toolbox, from which renderings are generated.



The Move Toolbox button displays the Move Toolbox, from which object, light and camera resources are positioned in the viewport.



The Select Toolbox button displays the Select Toolbox, from which the relationships between materials and objects can be modified.



The Normals Toolbox button displays the Normals Toolbox, from which object normal directions are modified.



The Color Toolbox button displays the Color Toolbox, from which material, light and background colors are chosen.

The use of these Toolboxes is described later in this chapter.

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## The Viewport Display Buttons

These buttons are used to set the viewport display. The viewport can display a single view angle, which is determined by selecting the Camera, Top, Front and Side buttons. Or it can display all four views simultaneously when the 4-Up button is enabled.

The Front, Top and Side views display the entire view, as well as the camera defined for that view. This way you can see not only the spatial relationships among the lights and objects in the view, you can also see the orientation of the camera in regards to these resources. In addition to the camera position and rotation, the field of view of the camera (the focal length) is represented in the view as lines emanating from the camera lens.



The Camera button displays the view from the camera's perspective. The position, rotation and focal length (or field of view) of the camera are taken into account when the Camera view is displayed. Camera view is the only rendered view. This view displays the resources as they appear in the rendered view. The Front, Top and Side views are used to facilitate the positioning of resources in 3D space.



The Top button displays a view from a position directly above the current camera location.



The Front button displays a view from a position directly behind the camera, but it differs from the camera view in that it doesn't take into account distortion caused by camera lens properties, and this view includes the camera itself.



The Side button displays a view from a position directly to the left of the current camera location.



The 4-Up button displays all four views described above. The camera view is located in the lower-left quadrant of the viewport, followed by the top, side and front views as you move in a clockwise direction. Note that this button is only available when the Move Toolbox is opened: it is not a relevant selection in any other cases.

## The Viewport Zoom Buttons

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These buttons are used to zoom the viewport display in or out. When orienting objects, lights or the camera in the Project Designer viewport, it may be desirable to zoom in on a particular area of the view in order to work more accurately. Renderize Live supports several zoom methods. You can perform a zoom on any viewport display, and that display will remain zoomed until you reset it. If you perform a zoom from the Camera viewport display, the view will render in its zoomed state.



The Zoom Box button allows you to zoom into a specific area of the viewport, defined by drawing a rectangular box. Select this button, then move the pointer into the viewport and drag the left mouse button to define a zoom box. The viewport display will be zoomed to this area. If after pressing this button you perform any other action besides defining a bounding box in the viewport, the zooming operation will be canceled.



The Zoom In button incrementally zooms in the viewport display. Each time this button is pressed, the viewport display zooms in another step.



The Zoom Out button incrementally zooms out the viewport display. Each time this button is pressed, the current view zooms out another step.



The Zoom Reset button undoes any zooming commands that were previously executed. This command resets the viewport to its default zoom factor.

## The Wire/Render Toggle

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The Wire/Render Display button determines whether the viewport is currently displaying your view in wireframe or rendered mode. When this button is depressed, the viewport displays in wireframe mode. When this button is released, it displays the most recently generated rendering. The position of this button updates automatically depending on what Toolbox you are in (for example, when you change the Move, Select or Normals Toolboxes this button automatically toggles to the wireframe mode), but sometimes you may wish to change the display manually.

## The Wireframe Update Buttons

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The speed at which objects can be manipulated in the Project Designer viewport depends in part on the complexity of the object being moved. An object that is made up of many polygons is going to move more sluggishly than an object that is made up of fewer polygons, because the additional polygons will take more time to redraw to the screen. These buttons allow you to improve response time by controlling the wireframe redraw process.



The Bounding Box toggle allows you to manipulate objects as bounding boxes. When this toggle is selected, objects are displayed as bounding boxes during manipulation. Whenever an object is positioned, rotated or scaled in the viewport, a bounding box appears in place of the object: this bounding box can be manipulated more quickly than the actual object wireframe because the number of lines that need to be redrawn is greatly diminished. If this button is deselected, the object wireframe itself is redrawn during manipulation according to the Maximum Polygon setting selected on the Preferences window: the lower this number, the fewer polygons are redrawn during manipulation, thereby speeding the screen redraw process. The default position of this button can be set in the Preferences window.



The Lock Draw toggle determines if a wireframe is redrawn in its entirety after it has been manipulated in the viewport. If this button is enabled, the wireframes are not redrawn after manipulation. For example, if they were manipulated in a bounding box mode, they will remain as bounding boxes after you release the mouse button. If this button is disabled, wireframes are redrawn in their entirety after manipulation in the viewport. The default position of this button can be set in the Preferences window.

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# Notes