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Using Ray Dream 3D with Other Applications

Introduction to the Work Flow

In many cases, you'll use files from other programs when you develop your Ray Dream 3D scene. These files may be images used in shaders or a backdrop. They might also be models created in another program.

And when you finish your scene, you'll generate some kind of output—a rendering or animation that you'll do post production on; or maybe you'll export 3D data for use in another program.

This chapter discusses importing and exporting 2D artwork and 3D models. It suggests methods of working with other applications that will help you get the most out of Ray Dream 3D.

Working with 2D Programs

Importing Shapes from a 2D Art Program

You can import line art for cross sections, extrusion paths, and envelopes into the **Free Form** modeler.

Ray Dream 3D can import the following formats:

- **Macintosh** Adobe Illustrator 1, 88, 3, 5, 5.5.
- **Windows** Adobe Illustrator 1, 88, 3, 4; Corel DRAW 3, 4; WMF; and CGM.

You can use any program that exports artwork in Adobe Illustrator format. Fractal Design Expression and Fractal Design Painter both export in this format, and you may have other applications that support it.

After you've created the artwork and exported it in Adobe Illustrator format, you can import the file into Ray Dream 3D.

For instructions on importing paths, refer to **"Importing Shapes" on page 104.**

Importing Images

Ray Dream 3D can open image files in a wide range of popular formats. Additionally, Ray Dream 3D supports Adobe Photoshop-compatible plug-ins for importing, filtering, and exporting image files.

For example, with an appropriate plug-in, you could scan an image directly onto an object as a texture map.

To import image files using an Adobe Photoshop-compatible acquire plug-in:

- 1 Place the **Acquire Plug-ins** in your plug-ins folder and identify the plug-ins folder to Ray Dream 3D. For instructions, refer to **"Filtering Images" on page 273.**
- 2 Display the map controls where you will be using the image—**Scene Settings: Effects tab: Background/Backdrop, Current Shader Editor, (Light) Properties: Gel tab.**
- 3 Pop-up the disk icon and choose **Import** from the menu.
- 4 Select your Acquire plug-in and use it to import the image.

Note: You might prefer to scan images into your image-editing program, where you can take advantage of cropping and retouching tools.

Exporting Images

Ray Dream 3D saves rendered images in a variety of popular formats. In addition, by using Adobe Photoshop-compatible export plug-ins, you could output rendered images with an export plug-in.

To export image files using an Adobe Photoshop-compatible export plug-in:

- 1 Place the **Export Plug-ins** in your plug-ins folder and identify the plug-ins folder to Ray Dream 3D. Refer to **"Using Plug-Ins with Ray Dream 3D" on page 23.**
- 2 Make sure that the **Image** window containing the image that you wish to export is active.
- 3 Choose **File menu► Export.**
- 4 Select the **Export Plug-in** from the list.

Working with Painter

Fractal Design Painter is a full featured painting and image-editing application.

You can use Painter for developing texture maps, gels, backgrounds, backdrops and other features that use 2D bitmap images or movies.

- You can also use **Painter's Shapes** tools to design cross sections, extrusion paths, and envelopes for the Free Form modeler. Choose **File menu► Export► Adobe**

Illustrator File to create a file you can import into Ray Dream 3D for its Bézier curves.

- You can use Painter for post-production work, like image effects, retouching, or compositing a rendered scene with other material—either a single frame or in a movie.

Painter's native file format is RIFF. Ray Dream 3D supports this format, so you'll have no trouble moving images between programs. You may also use any of the other formats supported by both programs.

Painter can open either a sequenced file set (numbered frames) or movie file animation. If you are going to use Painter to do post production on an animation, you should use sequenced files, not a (compressed) movie format. You'll want to retain as much image quality as possible. Painter converts the animation to a frame stack.

When you export the animation (Save As) from Painter, you can choose either a movie file format or numbered frames.

Working with 3D Programs

Importing Objects

Ray Dream 3D can open Detailer native format, 3DMF, DXF and files created in previous versions of Ray Dream 3D or Designer.

To import an object/model file:

- 1 Choose **File** menu► **Import**. Ray Dream 3D displays an **Open** dialog which you can use to select the file.
- 2 If you want to narrow the list to a certain format, use the pop-up to switch from **All Readable Files** to the format you want to search for.
- 3 When you have located the file, click **Open**. Ray Dream 3D displays the options dialog, which depends on the file type. The options are described below.
- 4 After setting your options, click **OK**.
Ray Dream 3D adds the object or model to the scene.

Detailer Files

Fractal Design Detailer's native file format is proprietary to Detailer. You'll use this format only when working with Detailer.

3DMF Files

3DMF is a 3D file format, developed by Apple, and supported by many applications. 3DMF includes UV coordinates (from most applications), so you can use Parametric mapping on the objects.

Note: Texture maps are not imported.

To set 3DMF options:



The 3DMF Options dialog can be used to set options when you import a 3DMF object.

- 1 Set the scaling units and conversion factor.
Appropriate values will depend on the object and application that created it. Use trial and error to determine a good setting.
- 2 Enable **Ungroup as much as possible** to reduce the levels of grouping.

This is a good idea if you want to shade or animate individual pieces of the model separately.

DXF Files

DXF is a public export text file format used by Autodesk and other CAD vendors. Because it is widely supported by animation, 3D modeling and rendering, and CAD programs, DXF may be used for importing and exporting objects between Ray Dream 3D and other applications.

When it was first created, DXF was only a 2D format. Later, it was improved to include 3D information. As a result, a DXF file can now simultaneously contain both 2D and 3D data. DXF is pure geometry. It carries no shading, lights or cameras.

It's important to realize that a perspective drawing is still a flat 2D drawing. In other words, an object drawn in perspective does not contain any 3D data. As such, the object cannot be observed from a different perspective without being redrawn from scratch. On the other hand, 3D models can be viewed from any direction.

Ray Dream 3D can import both 2D and 3D DXF data. However, since Ray Dream deals exclusively with 3D data, 2D DXF data is automatically extruded to generate 3D objects.

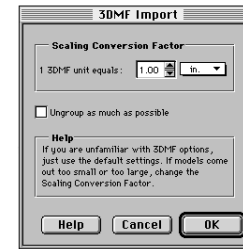
AutoCAD® and several other CAD software applications use layering to separate groups of objects. Unfortunately, layering is the only way for DXF to support separate groups of objects. Imagine a glass and a bottle grouped in the same layer. When writing the DXF file, AutoCAD and other CAD products will simply combine the 3D facets of both objects into one unit of information. In other words, once the file is saved, there is no way to tell the difference between the facets belonging to the glass and the facets belonging to the bottle. This is because the DXF file format does not support the higher level notion of an “object.”

To work around this, models and scenes created in DXF-compatible packages should, whenever possible, be designed with separate objects in separate layers. Facets in separate layers are assumed to belong to different objects.

Since this may not always be the case, another feature is provided: 3D facets with different colors are assumed to belong to different objects. Objects in the same layer but made of different colors will be imported as separate objects.

DXF importing creates a rather flat hierarchy. Objects found in a single layer are grouped.

To set DXF options:



The DXF Options dialog can be used to set options when you import DXF objects.

- 1 Enable the **Import and extrude 2D objects** option to extrude 2D DXF files.

This is useful to automatically build the “walls” of a floor map done in ClarisCAD™, Vellum™ or AutoCAD, and exported as a DXF file.

- Set an extrusion value. The units are based on the system that was used in the original file.
- 2 Enable the **Smooth Surfaces** option to have smooth shading on surfaces.
- Set a minimum smoothing angle. For example, with a 30 degree smooth angle, the surface at the junction of any two facets with less than 30 degrees of difference will be smoothed.

- 3 Enable the **Group all 3DFACE in a single object** option to group all imported 3D faces (3DFACE is a 3D face with 4 vertices) in one single object.

This is useful when importing 3D type, a logo or a CAD object that benefits from being treated as a single object.

- 4 Enable the **Separate 3DFACE by Layers and Color** option if objects need to be separated by layers and colors.

When this option is selected, 3D faces that are in the same layer and of the same color will be treated as a single object.

Import only 3DFACE entities Enable this option to exclude other information, like lines or 2D layout drawings.

Coordinate System to use Any AutoCAD coordinate system stored in the DXF file imported can be used.

If you are not familiar with AutoCAD and/or do not want to worry about this option, leave the WORLD system selected. WORLD stands for

the WCS (World Coordinate System), and CURRENT for the UCS (User Coordinate System) used when the DXF file was saved.

Not all CAD software uses both UCS and WCS. Many use only WCS. If this is the case, simply leave the WORLD coordinate system selected.

- 5 Use the Scaling Conversion Factor to relate the scale of the original DXF drawing to a real value.

Select the appropriate units, then enter a value in the **1 DXF unit equals**____ field.

If your DXF files do not import correctly into Ray Dream 3D, verify that the DXF file contains only 3D faces, meshes, or extruded poly-lines. DXF files containing points, lines, and arcs are not supported by Ray Dream 3D. Check the documentation of the software application that created the DXF object for information about saving DXF files so that they do not contain lines, arcs, or points.

Occasionally when importing a DXF file, you will see many objects in Ray Dream 3D. If that happens, go back to the original program and select the appropriate options to save the data as 3DFace entities.

Shading Imported Objects

Parametric mapping is the standard method of mapping shaders and paint shapes onto objects created in Ray Dream 3D. Parametric mapping requires precise information on an object's structure. For this reason, parametric mapping is sometimes not available for objects imported from other applications. DXF objects do not support parametric mapping.

If parametric mapping isn't available, you can shade the imported object using one of three projection mapping modes: **Box/Face**, **Spherical** or **Cylindrical**.

For information on selecting a projection mapping mode, refer to **"Mapping Modes" on page 129**.

Exporting 3D Files

To export the scene:

- 1 Open the scene you want to export.
- 2 Choose **File** menu► **Save As**. The **Save As** dialog appears.
- 3 In the dialog, use the menu to select the export file format.
- 4 Click **Options** and set options for the exported data. The options are described below.
- 5 When you're done with the **Options** dialog, click **OK** to close it.
- 6 Enter a file name, select the destination, and click **Save**.

To export objects:

- 1 Select the object or group you want to export.
- 2 Choose **File** menu► **Export**. The **Export** dialog appears.
- 3 Use the pop-up to select the export file format.
- 4 Click **Options** to set options specific to this format. The options are described below.

- 5 Enter a file name, select the destination, and click **Save**.

Detailer Format Options

The Detailer format is exclusively for working with Fractal Design Detailer. Refer to Appendix B in your Detailer Users Guide for complete information.

DXF Options

DXF has no options.

When exporting in DXF mode, each object is put in a separate layer, and the facets are stored as 3DFACE entities.

3DMF Options

3DMF is part of Apple's QuickDraw 3D Metafile format. Support of this format allows better exchange of objects between applications and platforms.

- 1 Enable Force Bézier to Polygons if you want to use polygons to approximate Bézier curves.
- 2 Click a radio button to select the degree of tessellation you want.

The High setting creates the most polygons, which produces more 3D detail.
- 3 Enable Export UV Colormap if you want to export a surface map of the object's shading color.

- 4 Use the Colormap UV resolution fields to set the map's resolution (pixels) in each dimension.

Note: When writing 3DMF files, objects are written as primitives whenever possible.

Virtual Reality Modeling Language (VRML)

VRML is the language used to create 3D spaces on the World Wide Web. When you visit a site created with VRML, you have the ability to interact with that site in 3D.

Ray Dream 3D's allows you to design your own 3D web site and then export it directly to the VRML format.

Objects and other entities in VRML are referred to as "nodes." The VRML format features several types of nodes.

Ray Dream 3D's VRML export filter supports the following nodes:

Shape Nodes

- Cone (primitive)
- Cube (primitive)
- Cylinder (primitive)
- Sphere (primitive)
- **Indexed Face Sets** is used for Free Form objects, Mesh Form objects, Text objects, the Icosahedra primitive, and any primitive objects that have been deformed

With this node, you have some control over polygon count to specify the smoothness of surfaces.

- **Coordinate3** is used in conjunction with Indexed Face Set node to store geometrical information.

Shaders & Textures

- **Texture 2** represents the effects of shaders.
- **TextureCoordinate2** controls the way that textures are used to approximate procedural shaders.

Cameras & Lights

- **LOD** represents an object with a precision that depends upon the distance to the camera. This is important in order to maintain browser speeds in complex online worlds.
- **Orthographic Camera** represents an isometric camera.
- **Perspective Camera** represents a conical camera.
- **Point Light** represents bulb lights.
- **Spot Light** represents spot lights.

- **Directional Light** represents distant lights.

Miscellaneous

- **Separator** groups other nodes into a single entity.
- **WWWAnchor** links the VRML scene to another scene.
- **WWWInline** includes a VRML object that exists elsewhere on the World Wide Web.

To set URL properties:

- 1 Select an object.
- 2 Display the **Properties palette: URL tab**.
- 3 Type in a URL.
- 4 Select either **Anchor** or **Inline**.
 - If an object is an anchor, then it can be a link to another URL, an HTML function, an animation, etc.
 - If your object is defined as an inline object, it links back to another VRML file where the object itself is stored.

Essentially, an inline VRML object is a place holder creating a link back to a different file. With this arrangement, you can update an object in a Virtual

World without rebuilding an entire page—you simply replace the inline object.

Note: VRML does not support all features available in Ray Dream 3D. Therefore, some information may be discarded when you export in VRML.

Note: Some VRML browsers do not support all features of VRML.

To set VRML export options:

- 1 Use the **Maximum resolution** field to set the maximum dimension of texture maps.

Note: If a size or distance threshold (see below) is specified, the texture maps for some objects may be at a lower resolution.

- 2 Enable the **External** option if you want the texture maps saved as separate files. If the checkbox is not set, the image data is stored within the VRML file.

On Windows, external texture map files will be named Image###.jpg, where ### is a decimal number starting at 000.

On other systems the files are named BaseIm###.jpg, where Base is the name of the VRML file.

If a file of that name exists, it will be replaced, so it is a good idea to save a VRML file to its own folder.

- 3 If you are saving texture maps externally, enter the URL prefix appropriate to locating the files.

This information will be necessary for the VRML to locate (and load) the images.

- 4 Click a radio button to select the degree of tessellation you want for non-primitives.

The High setting creates the most polygons, which produces more 3D detail. The size and distance thresholds (see below) also effect the degree of tessellation.

VRML supports **Cones**, **Cubes**, **Cylinders** and **Spheres** as primitive objects. All other shapes are created by a collection of polygonal facets.

- 5 Set a **Size threshold** if you want smaller objects to use a smaller texture map or a lower degree of tessellation.

Any objects smaller than the threshold will be represented by a coarser approximation. The coarseness is determined by the ratio of the object's size to the threshold value. For example, if the threshold is 12 inches, an object 6 inches across is likely to be represented at half the normal resolution. However, the relationship is not exact.

- 6 Set a **Distance threshold** if you want objects farther from the camera to have a lower resolution.

Objects within the threshold have full resolution. Objects beyond the threshold have reduced resolution.

Set the **Levels of detail** to describe the number of reduced resolution levels beyond the Distance threshold.

The ranges are centered on the object, and each range is double the distance of the inner range.

For example, if the distance threshold is 12 inches and there are four levels of detail, the four ranges are as follows:

- **Range 1** 0 to 12 inches (full resolution)
- **Range 2** 12 to 24 inches (reduced resolution)
- **Range 3** 24 to 48 inches (resolution reduced further)
- **Range 4** 48 inches and beyond (resolution reduced even further)

Note: If a VRML browser is capable of using Levels of Detail, the overall performance is likely to be better.

- 7 Enable the **Tessellate** option for any of the primitives you want better control of for texture mapping. See below for details.

If the checkboxes **Cones**, **Cylinders**, **Cubes** or **Spheres** are enabled, the object is exported as a set of tessellated facets, rather than as a primitive.

- 8 Enable the **Remove white space** option if you want the VRML file stripped of extraneous spaces.

Removing the spaces lowers the file size slightly.

Note: Spaces are used in the VRML file to show the hierarchical structure. This makes the file easier to read and edit in a text editor.

- 9 When you're finished setting **VRML** options, click **OK**.

About Texture Mapping in VRML

Cube

VRML 2.0 specifies that a texture map is applied individually to each face of a cube.

Ray Dream 3D applies the texture that is assigned to the 'Front' face of a Ray Dream 3D cube to each of the faces of a VRML cube.



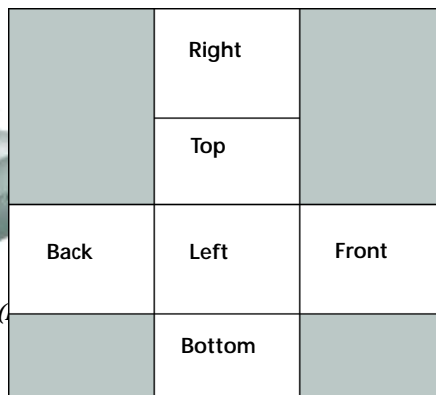
in Ray Dream

in VRML

Parametric mapping in Ray Dream 3D and what happens in VRML (right).

Only the portion of the image denoted by "Front" is used (on each face) by the VRML mapping on a cube primitive.

You can override this by enabling the **Tessellate: Cubes** option (step 7).



The image layout for parametric mapping on a cube in Ray Dream.

Cylinder

VRML 2.0 specifies that the image texture is wrapped around the curved sides of the cylinder. The texture applied to the ends of the cylinder is taken from the same image that is applied to the curved sides of the cylinder.

This is different from what Ray Dream 3D normally does. Ray Dream 3D applies the central portion of the image to the curved sides of the cylinder and uses the upper portion of the image on to the top and the lower portion on the bottom of the cylinder.

The VRML exporter ensures that the Ray Dream texture mapping on the sides of the cylinder matches that of the VRML object. However the texture of the top and bottom faces will be different.

You can override this by enabling the **Tessellate: Cylinders** option (step 7).

Cone

VRML 2.0 specifies that the image texture is wrapped around the curved sides of the cone. The texture applied to the bottom of the cone is taken from the same image that is applied to the curved sides of the cone.

This is different from what Ray Dream 3D normally does. Ray Dream 3D applies the upper portion of the image to the curved sides of the cone and uses the lower portion of the image on the bottom.

The VRML exporter ensures that the Ray Dream 3D texture mapping on the sides of the cone matches that of the VRML object. However the texture of the bottom face will be different.

You can override this by enabling the **Tessellate: Cones** option (step 7).

Sphere

Ray Dream 3D's parametric texture mapping can be directly converted to VRML 2.0.

Using Ray Dream 3D with Detailer

Fractal Design Detailer is a graphics product dedicated to developing surface maps on your objects. Detailer offers unparalleled art tools and features that will help you create extraordinary maps for color, bump, highlight, reflection and glow.

Ray Dream 3D supports the Detailer file formats, so you can take your Ray Dream 3D objects into Detailer and bring your Detailer surface maps into Ray Dream 3D.

For specific instructions on using Ray Dream 3D and Detailer together, see Appendix A of the Detailer User Guide.

Ray Dream 3D now supports the RIFF file format, used by both Painter and Detailer. (The Detailer 1.0 User Guide says that Ray Dream 3D 4.1 doesn't.)

Using Ray Dream 3D with Poser

Exporting Poser Figures for Ray Dream 3D

You can export a Poser figure in 3DMF format, then import this file into Ray Dream 3D.

When you export the figure, Poser gives you the option of exporting groups for each body part.

- If you want to keep the pose, don't enable this option. In this case, you'll be able to use one texture map to cover the entire figure.
- If you want to work with each body part separately, enable this option.

You'll need to move each part's hot point to the joint and establish links and limits to get any sense of articulation. To do this on the entire figure would be tedious, and the results would not match what you get in Poser.

Importing a Poser Figure

In the 3DMF import options dialog, set 1 3DMF unit to equal 8 feet. This should give a reasonable size to the imported figure. You can, of course, scale the object after it's imported.

When the figure comes into Ray Dream 3D, it will be lying on its back. To stand it up, set its **Properties palette: Transform tab: Orientation: Roll** to **90**.

Adjust **Properties palette: Transform tab: Orientation: Yaw** to change the direction the figure faces.

Texture Maps on Poser Figures

You can use Parametric Mapping as the mapping type on Poser figures that were imported from a 3DMF file. This mapping will offer the best results.

You can use one of Poser's default texture maps or create your own map, using one of the default maps as a template.