Using CorelDRAW! with Simply 3D

One of the most powerful features of Simply 3D is its ability to load and use two-dimensional drawings from CorelDRAW!, Adobe Illustrator and any 2D drawing package that can output to the AI file format. 2D shapes can be extruded into true three dimensional objects so that they can be oriented in Renderize Live EZ's 3D environment. Or, a 2D drawing can be loaded into Renderize Live EZ as a bitmap image, and mapped on to a rectangular polygon that can be oriented in the 3D environment.

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AI Files and TrueType Font Files

There are two ways to convert 2D drawings into 3D objects. The simplest way is to save the 2D drawing into the AI file format, and import that AI file into Renderize Live EZ. During the AI importation process you can set an extrusion depth for the 2D drawing, and this determines the "depth", or thickness of the 3D object that is created. The way in which the elements of the 2D drawing are filled with colors and combined at the time the AI file is saved determines the nature of the 3D object that is created when Renderize Live EZ imports and extrudes the drawing. This way of loading objects is discussed in the Loading AI Files from CorelDRAW! section.

Another way to create a 3D object from a 2D drawing is to save your drawing file in the Windows TrueType font (TTF) format, then assign it to a font style and extrude that custom font using the Visual Font software. This approach is less direct than using an AI file, but is allows you to define a "bevel" in addition to an extrusion depth. Visual Font allows you to define the nature of the edge between the front face and the extrude side faces of an object by assigning a bevel width and bevel height. The use of the TrueType format is discussed in the Saving TrueType Files from CorelDRAW! section..

Creating 2D Drawings for Use in Simply 3D

When a 2D drawing becomes a 3D object, a polygon structure is created to define the front, side and back sides of the 3D object. This polygon mesh can be thought of as the bones that define the shape. In addition, materials are created and assigned to the front and side faces of each element in the object. These materials can be thought of as the skin that will be wrapped over the bones. When a 2D drawing is loaded into Renderize Live EZ as a 3D object, these materials are assigned different default colors, based on the colors of the original drawing. You can use the Material Designer in Renderize Live EZ to define textures, reflections, opacity and shininess for these materials. You can also split the object up according to materials, so that a different object is created for each element of the shape.

Naturally, the shapes in your 2D drawing determine the shape of your extruded 3D object. In addition, other factors, including, outlines, fill colors and combined/uncombined shapes, all have an important influence on the way the shapes will appear when they are converted from 2D into 3D objects.

The following topics detail the main considerations when creating drawings in CorelDRAW! for use in Renderize Live EZ and Visual Font. They apply whether you are outputting your drawings to the AI file format of the TrueType font file format. In brief, the most important caveats are as follows:

If you are exporting filled shapes, delete the outlines for those shapes.

Use solid color fills instead of texture or gradient fills.

If you have drawn freehand curves, use the Auto-Reduce option in the Node Edit Roll-Up menu to minimize the amount of nodes in the curve.

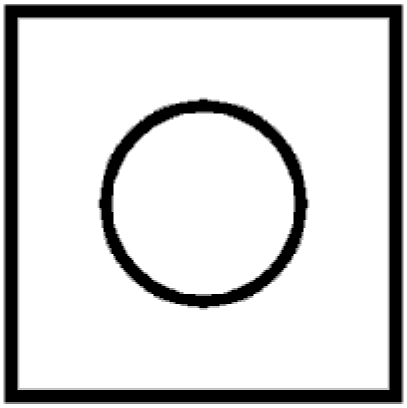
If you create shapes that cross over on themselves, you must add and edit nodes at the crossover point to define two separate shapes, one on each side of the crossover point.

Outline Shapes and Filled Shapes

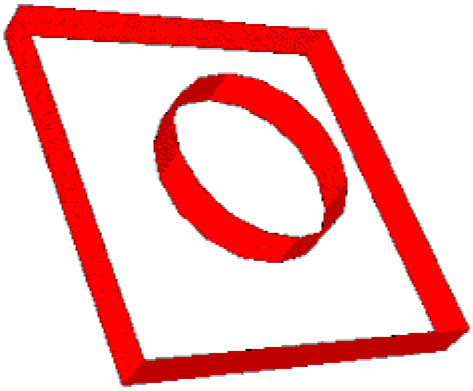
The most important rule to insure that useful 3D objects are created from your 2D drawing files is to be sure not to include both an outline and a fill for any given shape in the drawing. At best the outline will be ignored when it is converted to a 3D object: at worst, the 3D object will include overlapping polygons that represent the outlines and fills in the shape. Therefore, if a shape is filled, we strongly recommend that you delete the outline from that shape before saving it as an AI file.

Outline Shapes

When outline shapes are imported into Renderize Live EZ and extruded into a 3D object, they have no front or back faces: only extruded sides. That is, the lines are extruded to give them depth, but nothing exists in those areas between the lines. For example, we create this outline shape in CorelDRAW!



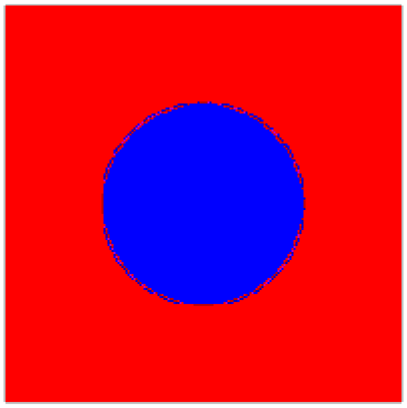
When the drawing is saved as an AI file and loaded into Renderize Live EZ as a 3D object, the object is rendered as follows:



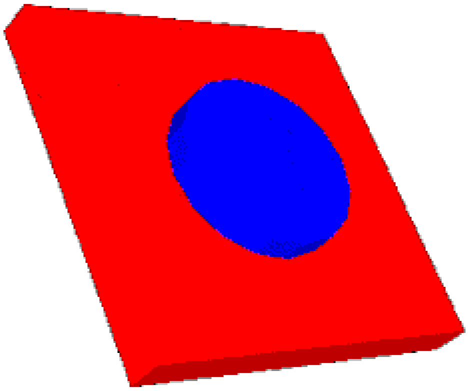
The camera has been placed below and to the left of the object in order to better display the object's extruded depth. Note that there are no front or back faces: because the original drawing was an outline, the extruded object is a 3D outline.

Filled Shapes

When filled shapes are imported into Renderize Live EZ, the extruded 3D object includes front and back faces, in addition to the extruded sides. For example, we create these filled shapes in CorelDRAW!



When the drawing is saved as an AI file and loaded into Renderize Live EZ as a 3D object, the object is rendered as follows:



The camera has been placed below and to the left of the object in order to better display the object's extruded depth. Note that the filled shapes are represented as solid objects with front side and back faces.

Note also that each shape exists on a different plane: the circle is in front of the square. This is the result of the Depth Offset value that was set for the object when it was imported: if there were no offset between the shapes, the circle would be "buried" in the square and we would not be able to see it. In this example we have set a large offset so that each of the shapes appears as a distinct 3D element. The default Depth Offset value is such that the shapes are offset just enough to see the front face of each shape. The Depth Offset value is set at the time the AI file is loaded: a complete discussion of this and all of the AI file importation options is discussed in the Loading AI Files into Renderize Live EZ section.

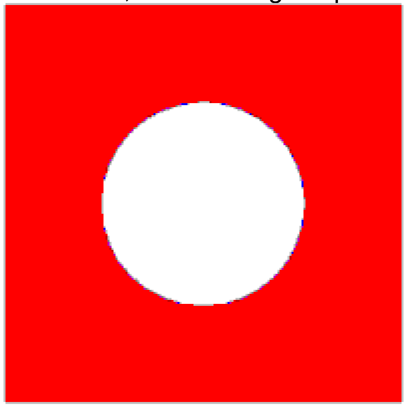
Note that you should always use solid color fills when creating shapes to import into Renderize Live EZ. Pattern fills are translated into solid colors. Gradient color fills break up the surface of the shape into multiple polygons, each with a different color. This will result is a gradient when the 3D object is rendered, but the number of polygons that must be generated to get the effect may be prohibitively high. If you want to make a 3D object appear with a gradient color, create the filled shape with a solid color in CorelDRAW!, then assign a bitmap texture of a gradient color to the object after importing it into Renderize Live EZ.

Combined Shapes vs Uncombined Shapes

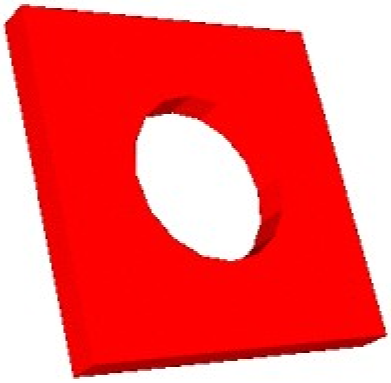
If you are only working with outlines, it doesn't matter whether your shapes are combined or uncombined: the resulting 3D object will be the same. However, if you are working with filled shapes, whether or not shapes are combined has an enormous impact on the nature of the 3D shape that is created.

Uncombined filled shapes can each have a different fill color. When you save uncombined shapes into the AI file format and load that file into Renderize Live EZ, a different material is created for each different color, and the material uses that color from the AI file as its default color. Therefore the imported 3D object looks very similar to the original 2D drawing. The only difference is that each of the different colored areas are "offset" to a different depth: that is, they are layered one in front of the other. The **Filled Shapes** section of the Outline Shapes and Filled Shapes section displays an example of uncombined shapes.

When you combine shapes, you are cutting one shape out of another to create a single complex element. If we were to combine the shapes in the "Filled shapes created in CorelDRAW!" illustration above, the resulting shape would appear as follows:



The filled circle has been "cut out" of the filled rectangle. Predictably, when this shape is imported into Renderize Live EZ as an extruded 3D object, the rendered shape also has a hole.



The camera has been placed below and to the left of the object in order to better display the object's extruded depth. Note that a hole is created in the appropriate area of the 3D object. The use of combined shapes allows you to create very sophisticated 3D objects with little effort.
Important: When importing combined filled shapes into Renderize Live EZ, set the Depth Offset to 0. Otherwise one-half of the resulting object will be offset in relation to the other half of the object.

Drawing Freehand and Bezier Curves

When you create shapes using CorelDRAW!'s Freehand Curve or Bezier Curve tools, keep in mind that the more nodes in your curved shape, the more polygons are required to create the 3D object. After creating curves, be sure to use the Auto-Reduce option on the Node Edit Roll-Up menu to minimize the number of nodes in the curve.

When you load an AI file into Renderize Live EZ, remember that the Curve Resolution value indicates the number of lines that are created between each node.   If you define a curve with 10 nodes, and set a Curve Resolution of 10, the resulting 3D object will have 100 polygon segments to define the curve.   Therefore, when working with curvy shapes be careful how high you set the Curve Resolution value during the AI file load process, because it can quickly increase the number of polygons required to create the 3D object, and the more polygons in the object, the slower that object will load and render.

The Curve Resolution value, entered during the AI File loading process, is discussed in full in the Loading AI Files into Renderize Live EZ section.

Drawing Shapes that Cross Over on Themselves

Using the Curve Tool or the Node Edit Tool, it is possible to draw shapes that cross over on themselves. The simplest example of this shape is a figure eight. These shapes will not extrude correctly when loaded into Renderize Live EZ. Therefore, they must be edited in CorelDRAW! prior to export, in order to insure that a valid shape is generated.

To edit a crossover shape so that it will work as a 3D object, you must zoom in on the point of crossover, then use the Node Edit to add a node at that point, break apart the lines and move one endpoint away from the crossover point. Then add another one on the remaining line and break it apart also. Finally, reposition and join the nodes so that you have defined two closed shapes on each side of the crossover point, and combine these shapes so that they exist on the same offset plane when the AI file is imported into Renderize Live EZ.

Saving AI Files from CorelDRAW!

There are no tricks to saving your CorelDRAW! drawings to the AI file format. Simply select File, Export from the CorelDRAW Menu Bar, then choose "Adobe Illustrator 1.1, 88, 3.0 (*.AI, *.EPS)" from the List Files of Type pop-down. After you type in the desired filename and press OK, a menu appears with a list of AI output options.

Although it shouldn't matter, we recommend that you output using the "Adobe Illustrator 3.0" option. In addition, you should export Text as Curves.

AI files can be loaded directly into Renderize Live EZ using the File, Load Object command from the Menu Bar. For a complete discussion of the loading of AI files, refer to the Loading AI Files into Renderize Live EZ section.

Saving TrueType Files from CorelDRAW!

CorelDRAW! shapes can also be output to the Windows TrueType font (TTF) file format. This allows you to load the shape into Visual Font software for conversion into a 3D object. The advantage of this is that you can define **extrusions** with more visual feedback, and in addition you can define a **bevel** for the shape. A bevel is created at the corner between the front face and the side face of the extruded shape. Visual Font allows you to define the width and depth of the bevel, which determines how deeply the bevel face cuts into the front and side faces of the shape.

Note that you can only export single shapes into the TTF file format. Therefore you may need to combine shapes before saving to this file format. In addition, color information is not saved as part of a TrueType font. For a complete discussion of the kinds of shapes that can be saved as TrueType fonts, as well as an explanation of all of the TrueType export options, please refer to the CorelDRAW on-line help. Specifically, do a Search for TTF, and you'll find two entries:

> Select the "TTF fonts: Notes on exporting" entry, then select the "Export Adobe Typ 1/ TrueType Fonts -- Technical Notes" topic for a discussion of valid shapes.
>
> Select the "TTF: creating TrueType fonts" entry, then select the "Special Text Features" topic and choose the "Creating Adobe Type 1 and TrueType Fonts and Symbols" heading for a complete discussion of the TrueType font export features.

Transferring shapes from CorelDRAW! to Renderize Live EZ through the TrueType file format involves several steps. First you must export the shape into the TTF file format and assign it as a keystroke in a font family. Next, you must add that font family to the list of installed fonts in Windows, if that family is not yet installed.. Now you can select that font family in Visual Font and type the keystroke that was assigned to the shape, and that shape will appear in Visual Font, ready to be extruded and beveled.

To save a shape as a TrueType font, select File, Export from the CorelDRAW! Menu Bar and select "TrueType Font, *.TTF from the List Files of Type" pop-down. If you type in a unique filename and press OK, a dialog box appears in which you must assign a font family name that refers to this file: this is simply the font style name that will appear when a Font Browser is displayed. In addition, this dialog box includes a Symbol Font check box: do not enable this check box.

Note: When you create new TrueType font files, don't save them into the Windows directory. Instead, save the file to a working directory, and reinstall the font as needed after you add a new shape to a font family

If you assign the shape to an existing TTF filename, that shape will be added as a character in the existing font family: it will not replace shapes that may already be assigned to that TTF file. We strongly recommend that you work this way, creating your own unique font family and assigning your shapes to different keystrokes in that family. That way you won't be modifying TrueType character sets that may have come with Windows or from a third party font vendor, and you'll have your own font style in which your shapes are stored..

After assigning the shape to a TTF file and assigning a font family name (if you've created a new TTF file), a dialog box appears on which you are prompted to assign the shape to a keystroke. The keystroke you choose here is the keystroke that you will press to make the shape appear when you are working in Visual Font. After assigning the desired keystroke, press OK to complete the command. You must remember or notate the keystroke that you have assigned to a shape, because will be no indication later on that your shape is assigned, for example, to the letter "A". And remember, the assignation of shapes to keystrokes is case-sensitive. This dialog box also has some other type-in boxes that allow you to determine the position of the character in relation to the other characters in the current font family. These values are not important unless you plan to type in a string of shapes.

After creating a new font family, or adding a shape to an existing font family,, you must install (or reinstall) that font in Windows. To do so, select Control Panel from the Main program, group, then select the Fonts icon. Select the Add button, then change directories to the one where the shape was saved as a TTF file. The font family name appears, and you can install it by selecting it and pressing OK. That font family name should now appear in the list of installed fonts, so when you choose the Format, Choose Font command from Visual Font, that font family will be listed. If the font family has already been installed in Windows, you must delete it using the Remove command, then reinstall in order to update it with any shapes you have added since the last time the font was installed.

After you choose the desired font family in Visual Font, simply type the keystroke that was assigned to the shaped, and that shape appears in the Visual Font Viewport, ready to be extruded and beveled.

Loading AI Files from CorelDRAW! into Renderize Live EZ

There are several ways to load AI files into Renderize Live EZ. The best way to load them depends on the effect you wish to achieve and the way you originally created the drawing file in CorelDRAW!, Adobe Illustrator, or whichever drawing package was used. Please refer to the Using Simply 3D with CorelDRAW! chapter in this manual for a discussion of the ways your work in CorelDRAW! affect the look of the drawings when they are imported into Renderize Live EZ as 3D objects.

To load an AI file into Renderize Live EZ, select File, Load Object from the Menu Bar. Select *.AI from the List Files of Type pop-down on the File Browser to display a list of AI files, then double-click on the desired filename to load it.

When you select an AI file to load into Renderize Live EZ, 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.

If you select the 3D option, an AI Browser appears. The selections on this Browser allow you to determine the Extrusion Depth, Curve Resolution and Depth Offset for the imported object.

Extrusion Depth

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. Unles you have changed the "Up Axis" option in the Preferences window, the depth axis for an imported AI file is the "Z" axis.

Curve Resolution

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

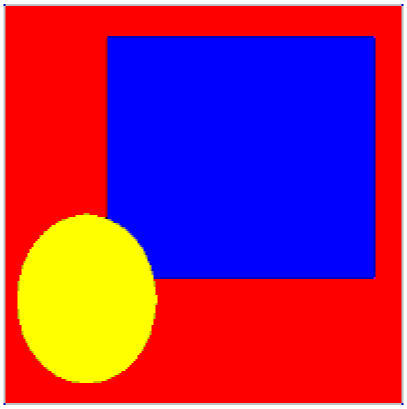
The Depth Offset value determines the relative depths of the different elements in the AI file. If you are working with overlapping filled shapes, you must set a Depth Offset value greater than zero, otherwise when the 3D object is created the overlapping elements will exist on the same plane and render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

Important: If you are importing a combined shape, you should set the Depth Offset to 0. While in theory the combined shape is a single element, in fact it is often broken up into two halves. If you import this shape with a Depth Offset, the resulting 3D object may not be what you wanted.

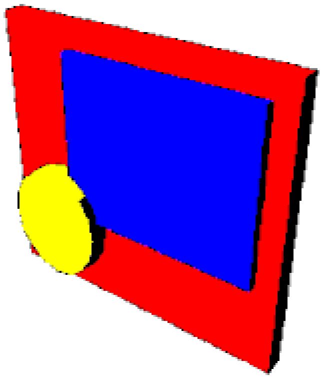
The default Depth Offset value is 0.2, just enough to insure that each element exists on a different plane so that all elements will be visible when the 3D object is rendered. As you increase the Depth Offset value you are increasing the "Z" distance between each element, and therefore increasing the 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 AI file was created. The layering of elements can be changed in CorelDRAW! using the Arrange, Order command.

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 CorelDRAW!.



If this drawing were imported into Renderize Live EZ 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 EZ 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 EZ, and that the default material colors for each element are the same colors that were used when the elements were created in CorelDRAW!. 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.