Art•lantis Render 3.0

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Exercise

1

Rendering

1. Launching the program

Objective

To launch Art•lantis Render and open a sample document.

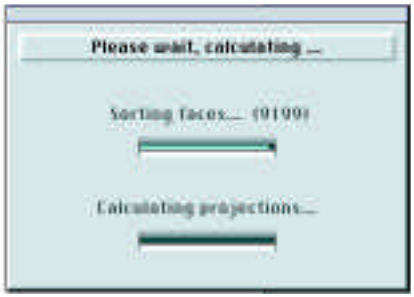
• **Double-click on the Art•lantis Render icon.**

Macintosh

Windows

• **Open the document using "Room Start", file, located in "Tutorial 1"'s sub-folder, within the "Tutorial" folder.**

Two information windows appear in succession in the middle of the screen, indicating the phases of the loading process: reading points (5654), reading objects (9199), sorting faces (9199) and calculating projections (224).
The loading process is represented by sliding gauges, so you can watch its progress.



Once Art•lantis Render has loaded, it calculates the image, which it displays progressively in the preview window.

When the display is finished, the work can begin.

Two windows will be displayed on your screen: to the right, the preview window containing the scene and to the left, the window for adjusting the first shader, which corresponds to the first material on the list.

Info.: ***What is an Art•lantis Shader?***

"Shader" is the term used to describe the appearance of an object's surface. Each object has a material, made up of a color and basic characteristics (matte

or shiny, for example), to which you can add a shader to give the object a much more sophisticated look: photorealistic.

Note :

In the "Materials list" window, you'll find a list of the names which correspond to the different materials that were assigned to each object in the modeling program (table, wall, etc...). One word of caution: these materials are ***not*** *3D objects, because the same object can be made up of several materials, and the same material can be applied to several different objects. (A wall and a ceiling can be made up of the same material, for example.)*

You can select any object in the preview window by clicking directly on it :

• hold down the mouse button and drag the cursor onto the object in the window.

• keep the cursor on the object for 1-2 seconds.

The object you've selected will be displayed with the material color that was assigned to it, while all other objects in the scene will be dimmed.

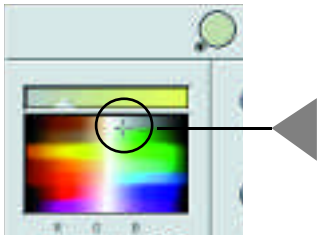
The interface is intuitive and interactive.

2. Modifiying colors

Objective

To select an object and modify its color with a palette, or "picker".

Art•lantis Render automatically defines the object's default material as the first one found in the Materials list.



• **Move the cursor inside the "Picker".**

The material's color changes immediately in the preview window.

Between the color patch and the "picker", you'll see the saturation bar (for more information about the saturation bar, refer to the User's Guide).

You've just completed your first scene adjustment. If it didn't seem very difficult, you'll be pleased to know that the other adjustments will not be any more complex than this one!

3. The shaders library

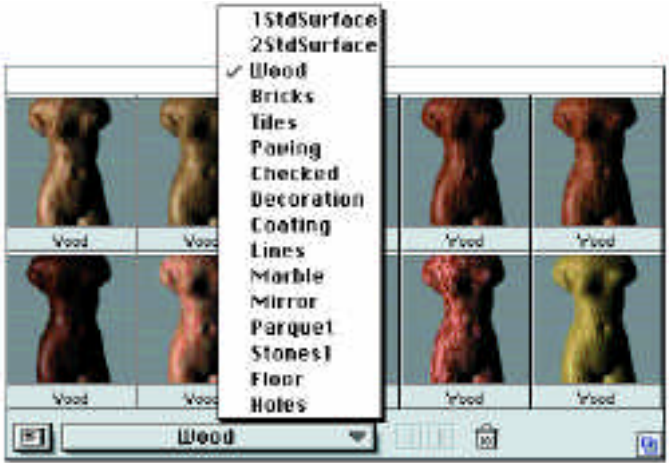
Objective

To open the Library and master the tools for navigating the shader families.

You can now customize your image by choosing shaders and attributing them to the scene.

• Open the shaders library by selecting "Library" in the Windows menu.

The library is made up of numerous families.
The current family is made up of one or several "pages" of shaders whose names appear below their icons: Wood, Chrome, Plastic, Marble, etc.

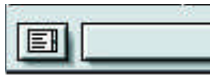


To view a family:

• Click on the Families List at the bottom of the window and hold down the mouse button.
• Drag to the name of the family you want to view.
• Release: the family is displayed in the window.

To display the Families list:

• Click on the button at the window's lower left.



• Click in the list on the name of the family you want to view. If a family contains several "pages", click on the "Right" and "Left" buttons to flip through them.

4. Applying a shader

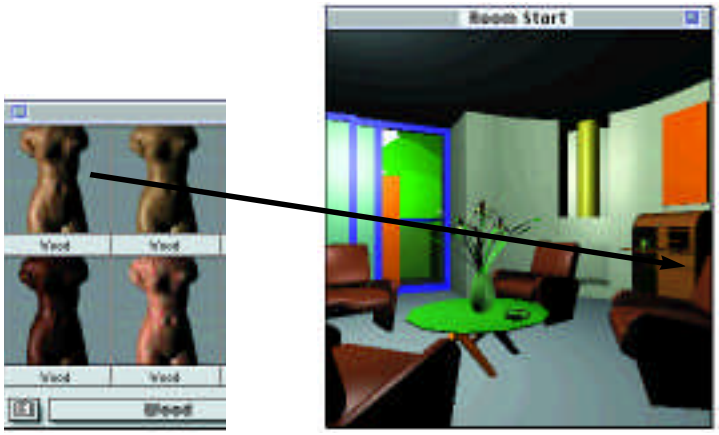
Objective

To attribute shaders directly to objects in a scene.

• **Move the cursor onto the first shader in the Wood family.**

Click and Drag

• **Click on the shader and drag the cursor onto the wooden bureau in the preview window. Be sure to hold down the mouse button.**



As soon as you release the mouse button, Art•lantis applies the wood shader to the bureau. The program works continuously, meaning that the scene will be displayed and updated non-stop from bottom to top. This means you can continue working on the scene and you don't have to wait for a recalculation or update.

5. More shaders... !

Objective *To apply a shader to each material.*

To choose a new shader:

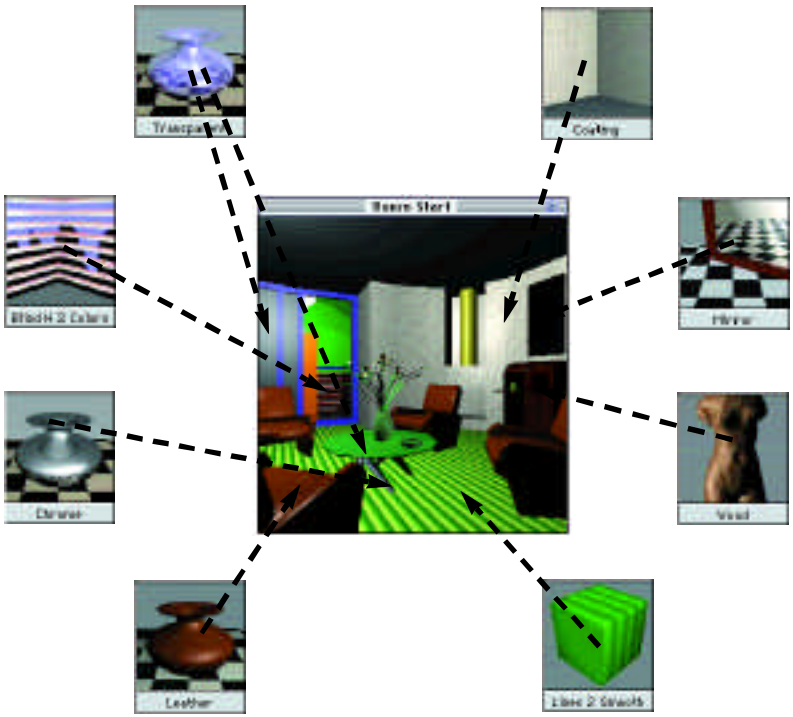
• Choose a shader from a family.
• Click on its icon in the family while holding down the mouse button.
• Drag it onto the object in the preview window's 3D scene where you want to apply it.
• Release the mouse button.

The preview window will be updated immediately with the new shader applied to the surface.

• Now apply shaders to the following objects:

• Chrome	(1StdSurface)	on the table legs
• Transparent	(1StdSurface)	on the table
• Transparent	(1StdSurface)	on the window
• Leather	(2StdSurface)	on the armchairs
• Wood	(Wood)	on the bureau

• Coating	(Coatings)	on the wall
• BlindH2Colors	(Decoration)	on the balcony
• Mirror	(Mirror)	on the panel
• Line2CSmooth	(Lines)	on the floor



You've just applied a shader to every object in the scene!

6. A surface's "Roughness"

Objective

To understand the "Roughness" parameter by experimenting with its dialog box on one of the objects in the scene.

• Close the Library by clicking in the box at the upper left side of the window.

Now click on an object in the scene. The shader modification dialog box for this object will be displayed.

• Click on the mirror (the surface on which you'll apply the Mirror shader).

A dialog box opens automatically and gives you different adjustment options: the color picker and its patch, the Shininess sliding gauge, and the Roughness sliding gauge.

- **Slide the Roughness gauge slightly to the right.**

You'll notice that the light spot's concentration diminishes the further you slide the cursor to the right.

The roughness lets you add more or less light to a surface. Moving the cursor to the right gives you a more defined spot, whereas sliding it to the left results in light that is more spread out along the surface.

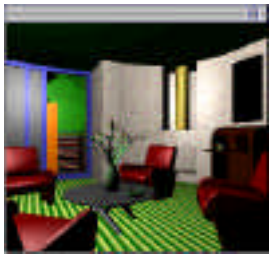
Of course, this parameter's effects depend on the way objects are positioned in relation to light sources.

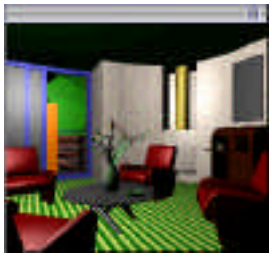
7. A surface's "Shininess"

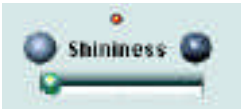
Objective

To understand the "Shininess" parameter by experimenting with its dialog box while modifying the shader applied to one of the objects in the scene.

- **Slide the Shininess gauge to the right.**







You'll notice that the mirror catches even more light when it has a high level of shininess. Likewise, a lower level gives the shader a more matte appearance, and the object seems to absorb the ambient light.

8. Ray Tracing

Objective

To use the Ray Tracing option in calculating a scene in the preview window and to observe its effects on a reflective object, like a mirror.

After you've clicked on the Mirror shader and attributed it to the mural, you'll notice that the material isn't reflective. In fact, ray tracing requires longer calculation time, so by default, it is not active. To activate it:

- **Go to the "Options" menu and activate "Ray Tracing". When the option is active, it will be checked in the menu.**

- **The first time you launch ray tracing, it may take a few seconds to calculate the reflections.**

Before

After

Note:

To make sure that the preview mode remains rapid, we recommend leaving the ray tracing option inactive until you need to see how ray tracing affects reflective objects in the scene.

CAUTION:

If you select ray tracing for a scene that includes several objects whose shaders have a high level of shininess, the preview window's update process could be slowed considerably. To keep this calculation time to a minimum, we recommend that you watch the indicator below the Shininess sliding gauge. When it is red, that means that the reflections will be calculated. You can then choose whether or not to activate the option, based on the number of calculations to be carried out and the complexity of the scene.

• Deactivate "Ray tracing" in the "Options" menu by dragging down to it. The check mark will disappear and the option will become inactive.

9. Flip and the compass

Objective

To understand and master the Flip and Compass tools for orienting shaders on diverse objects in the scene.

The "Flip" function helps you turn the shader around the object the way you would turn a cube or die.

The following example shows four successive Flips around a cube:

0 Flip

1st Flip

2nd Flip

3rd Flip

Click on the floor in the scene to select it and choose the shader, Lines2Smooth.

• Click once on the Flip button, then again, and then a third time to return to the original orientation.

The “Compass” function helps you orient a shader on a surface the way you would turn a piece of paper on the surface of a table.

• **Use the same shader on the floor: Lines2Smooth.**

• **Click and move the compass “needle” with the cursor. Orient the shader to 45° then to 90°.**



Note:

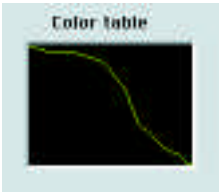
Depending on your screen’s definition, the lines may appear imprecise. Don’t worry: when Art•lantis calculates the final image, it uses antialiasing.

• **Return the needle to 0°.**

10. The color table

Objective

To understand how to use the Color Table to change the geometry and graduation of colors in a shader.

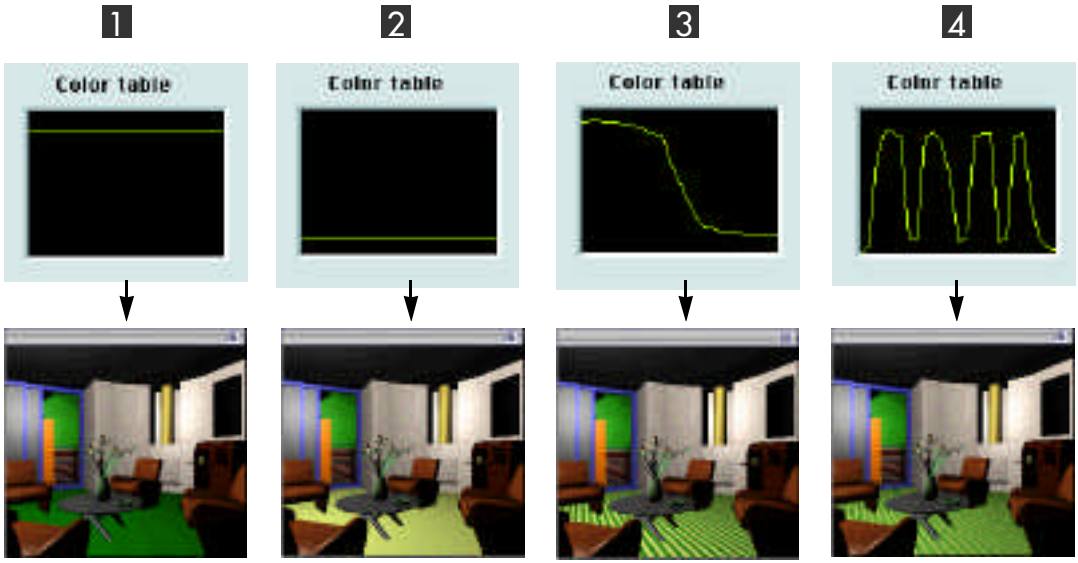


• Continue using the "Lines2Smooth" shader and click on the floor to open the modification dialog box.

You'll see the Color Table at the lower left portion of the dialog box. This table helps you change the color graduation easily.

To change the Color Table, click in the box near the line's default placement, redraw the curve with the cursor while holding down the mouse button.

• Click and redraw the line to resemble the curves below. As you make each change, watch how the pattern of the shader on the floor changes in the preview window.



The Art•lantis Render Color Table helps you define the graduation from one color to another for any shader that's made up of at least two colors.
In the floor example, the table defines the graduation between the yellow and the green:

• a horizontal line at the top of the table (screen 1) tells Art•lantis Render that the green color will be completely dominant.

• a horizontal line at the bottom of the table (screen 2) tells Art•lantis Render that the yellow color will be completely dominant.

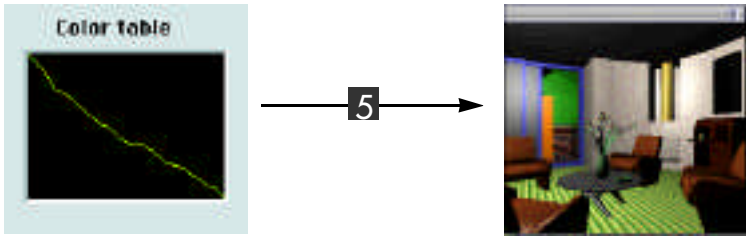
• a curve broken into “staircases” between the two horizontal lines at the top and bottom of the table (screen 3) results in a transition between the two colors, yellow and green, without a graduation.

• a curve with several “jags” (screen 4) results in a succession of lines with dramatic graduations between the two colors.

• a more gentle curve without “jags” (screen 5, below) creates a progressive graduation from one color to the other, in which the two colors mix in a sort of transition zone.

Try designing other curves for this shader and study the results. The color table is a sophisticated tool for creating a wide range of color graduations. The results will be different if the shader is made of parallel lines, squares, or a more irregular material (marble, for example).

It’s important to experiment with the color table to see how it affects each shader. Design several types of curves. You’ll soon understand how the textures react to each type of curve and you’ll be able to create more diverse and sophisticated surfaces. Playing with the color table will help you to understand the diversity and richness of color that you have available to you at your fingertips.



11. Adjusting Proportion and Scale

Objective

To understand and master the parameters for changing the size of repeated patterns in a shader.

• Select the "Circles2Colors" shader from the "Floor" family and apply it to the ceiling. Its dialog box opens.

• Move the cursor to the far left of the Proportion gauge, then to the far right.

The Proportion gauge defines the relationship between the colors in a shader that has at least two colors in a repeating pattern, as the ceiling in the above example:

- Cursor at the center of the gauge: neutral position. The colors will be evenly distributed (circles and intervals between them).
- Cursor to the left: the circles will be much smaller and the

interval between them very large.

• Now click and slide the cursor to the left and then to the right of the Scale gauge.

• Choose the scale.

The Scale gauge defines the relative size of the shader's motif, without affecting the proportion of the material's colors.

A low level of Scaling results in small circles with a narrow interval between circles, but with a constant distance between each. A higher level results in large circles, with large intervals between them.

The Proportion and Scale parameters apply to a wide range of shaders in Art•lantis Render. Regardless of the shader's individual geometry, these parameters function in the same way for all shaders.

12.
Transparency and opacity

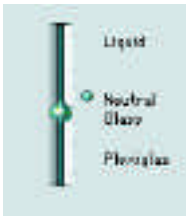
Objective

To modify a shader's opacity and launch a ray tracing calculation in the preview window by activating the transparency option to see how it affects a glass object.

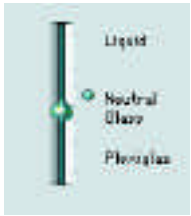
• Click on the table in the 3D scene to open its parameters dialog, "Table: Transparent".

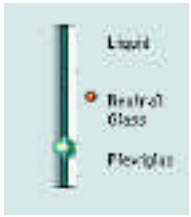
• Slide the cursor to the right of the "Opacity" gauge to make the material transparent.

• Now slide the refraction gauge (at left) slightly toward the bottom.



• In the Options menu, activate the "Transparency" function, then "Ray Tracing".





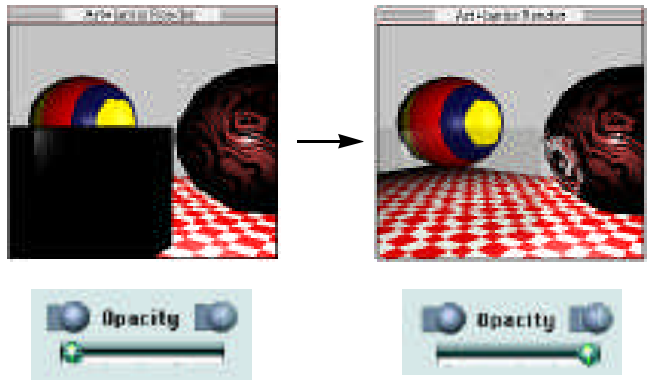
The Opacity gauge indicates the material's level of transparence:

if you slide the cursor to the left, the material will be opaque; if to the right, the material will be transparent.

The Refraction gauge adjusts the material its refraction index, which defines the angle at which light rays deviate when they meet a transparent material. To better understand refraction, think of a common example of this property: when you partially submerge a long object in water (for example, a tube or your arm in your bathtub!), you notice that the part that's immersed doesn't appear to be an extension of the part that's outside the water. The object appears to be twisted or buckled — this is the deviation. This phenomenon is called refraction. The higher the refraction index, the larger this angle of deviation will be.

Note :

This option requires longer calculation time. The following is an example of a scene in which you can see the dramatic effects of the activated transparency option.



• Deactivate the Transparency and Ray tracing options. You're now ready to move to the next exercise.

13. Zooming and Texture Maps

Objective

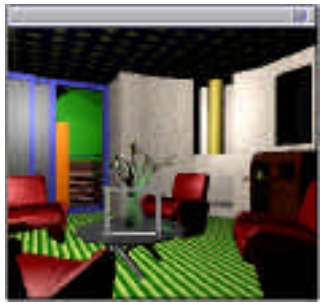
To experiment with the Zoom tools to work on precise details in a 3D scene. This tool will be illustrated by applying a texture map to a vase.

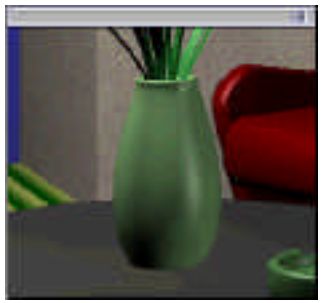
• **Activate the "Zoom" command in the "Options" menu.** A square will appear in the preview window.

• **Reduce the square's size by clicking on one of its angles and sliding it until the square is the desired size.**

• **Center the square over the area you want to enlarge by clicking on one of its edges and dragging it to the appropriate part of the scene.**

• **Validate the zoom by clicking inside the square.** Art•lantis launches an overall recalculation.





Note:

Art•lantis Render keeps the first preview window in memory so that you can eventually return to the "Original size".

• Click on the vase to select it, then check "Apply texture" in its dialog box.

The following Texture Mapping dialog box opens:

• Click once on the "Create" button to load the image that contains the texture you want to use.

A general dialog box opens that lets you select the image. Choose the image named "Bubbles.tga".

• **Open the image.**

Note:

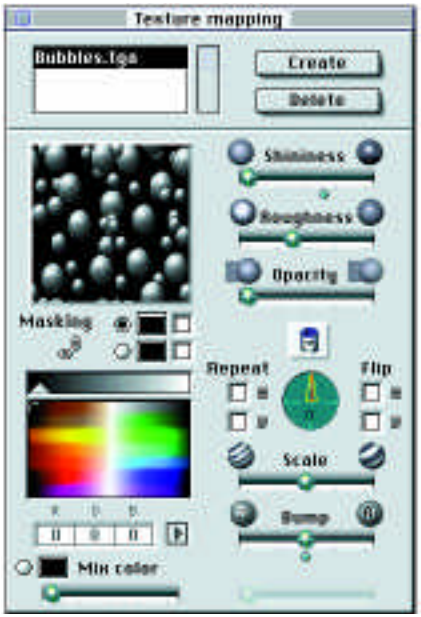
Any image that's been saved in PICT, TGA, JPEG or BMP format can be used as a texture and can be mapped.

A dialog box opens that asks you to choose either automatic adjustment or to modify the texture's dimensions (size). To modify the size manually, take into account the reduced size of the vase in relation to the image's original size:

• Click on the "Size" button and enter the following values: Width= **10** and Height = **10**.

• **Validate your choice by clicking on the OK button.**

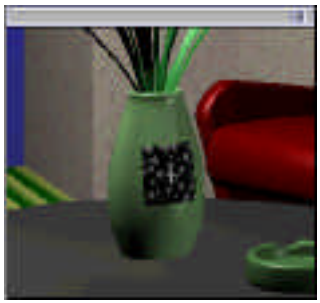
The image appears in dialog box's window.



When you open the image, the texture will be positioned at the center of the object by default.

To change the texture's position on the vase:

• **Hold down the "Ctrl" key and click on the part of the vase where you want to place the center of the texture.** This new point becomes the center of the texture map.

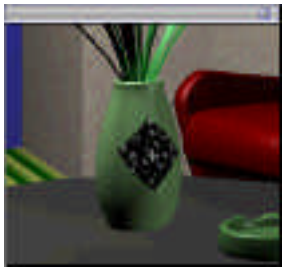


14. Orienting and masking a texture

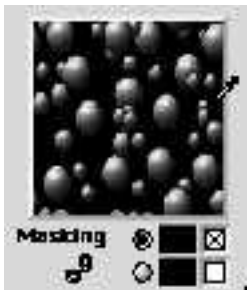
Objective

To use the basic texture dialog box tools to orient and turn a PICT texture on a 3D object. To mask one of a map's colors.

• **Move the compass needle to pivot the PICT to a position of 45°.**



• **Return the compass needle to 0°.**



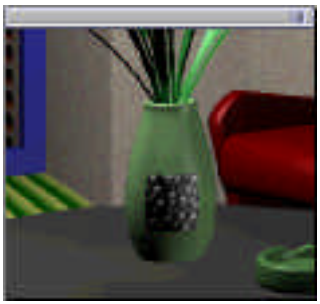
You can create a mask by deleting certain colors as a texture map is applied.

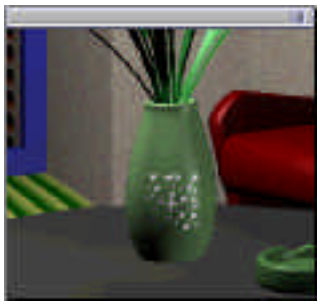
• **Check the box to the right of the upper round button.**

The mask is defined either by a single color, two colors, or by a range of colors between two color extremes. For more information on masking, see the Masking section in the User's Guide, Chapter 5, under the Edit Shader sub-section.

• Activate the upper round button by clicking on it, then click on the black part of the image in the dialog box.

Art•lantis Render eliminates the black color. The image itself isn't affected — only the texture that's been applied to the surface.





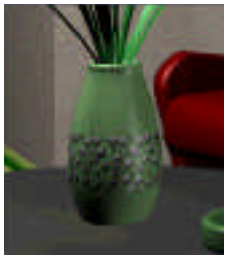
15. Repeating a texture

Objective

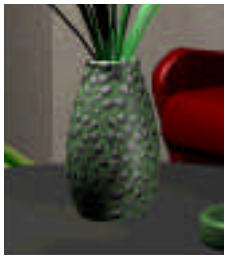
To master the tools for repeating a texture horizontally or vertically on an object surface.

In the dialog box, you'll notice several other parameters for your mapped image. Around the compass, you'll find the Repeat boxes. These tell Art•lantis Render to repeat the texture horizontally, vertically, or both.

• Check the "H" box. The image repeats horizontally around the vase.



• Check the "V" box and the image repeats vertically.

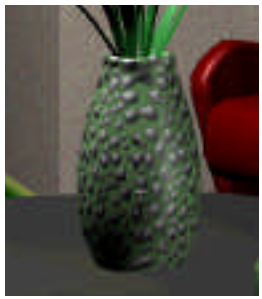


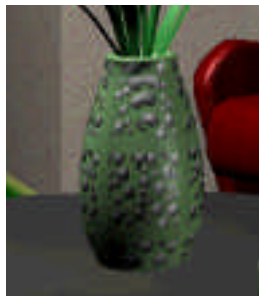
16. Spacing textures

Objective

To modify the spacing between repeated textures.

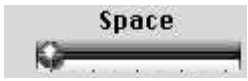
• **Slide the cursor slightly to the right along the Spacing gauge.** You'll see the spacing between each map repetition increase.





The spacing value is determined by its relation to the texture map's reference size (indicated by "Size" in the dialog box after you've selected the image).

• **To undo the spacing, simply slide the cursor along the gauge to the left.**



17. Texture and Bump

Objective

To master the tools for creating bump (relief) with an applied texture map. This process will be illustrated with a texture map that has been rendered completely transparent.

The Bump (relief) function helps you simulate a 3D effect on a material based on the luminosity of the applied image.

Before using the Bump function:

• **Increase the mapped image's luminosity** by using the Shininess and Roughness sliding gauges.

By changing the shininess and roughness levels, the image reacts to the light sources in the scene and becomes more luminous.

To give the image bump (relief):

- **Slide the cursor to the left along the Bump gauge.**

Notice the effect: the Bump acts on the darkest parts of the motif and gives them the appearance of being "sunken" or in shadow.

The red indicator (below the sliding gauge) lights up to tell you that the Bump function is active and that the calculation time will be longer.

- **Slide the cursor to the right.**

You'll see that the effect is the opposite: the texture "protrudes" from the object's surface.

The Bump function also helps you create a 3D effect by suppressing the colors that make up the mapped image. To suppress the colors, simply make the image transparent.

- **Slide the cursor to the right of the Opacity gauge.**

The mapped image becomes invisible, but the relief (its texture) remains and takes on the color of the vase (green).

If, for example, you superimpose several mapped images on an object, the 3D effect will take the color of the image situated just below it.

Note:

To undo the Bump effect, simply click on the red indicator beneath the sliding gauge. It will light up in green, indicating that the 3D effect is no longer active.

18. Texture and preparing a scene

Objective

To use texture maps to add people and vegetation to a 3D scene.

To give even more realism to a 3D scene, you can enrich it with elements like people, plants, vehicles, etc.

To do this, you could, of course, try to use your favorite retouching program to modify the image you've calculated in Art•lantis Render — add a tree, a person, a panel, etc. However, you'll have to manage its masking, background, foreground, luminosity, and definition: not always an easy task. And juggling so many parameters can be extremely time-consuming.

But with Art•lantis Render, you can easily place 2D images into a 3D scene. In this exercise, you'll place a person and vegetation on the balcony.

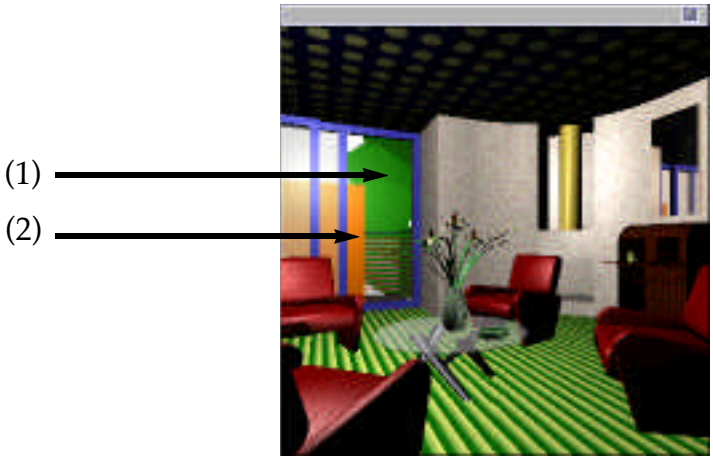
With the help of a 3D modeler, we've created two faces (polygons) which will be the support for the texture-mapped images.

For this exercise, you need to activate "Transparency" to apply the textures to objects behind the window.

• **Activate the "Transparency" option in the Options menu.**

• **Activate "Return to original size" in the Options menu, then click inside the preview window to validate.**

The original view reappears. Note the two faces that have been placed in the scene: the first (1), outside the balcony (in the complete background of the scene), is green and the second (2), situated just behind the window, is orange.



• **Click on the green face.** The dialog box for the "Tree" shader will appear.

• Open the Shaders library and click on the "Invisible" shader in the Decoration family.

• Slide the shader onto the "Tree" polygon in the preview window.

The material becomes invisible, but is still present in the scene and is used as support for your texture map.

• Check the "Apply texture" box at the bottom of the Invisible shader dialog box.

The texture mapping dialog appears.

• Click on "Create" then select "Leaves.tga" in the dialog.

Keep the default options: "Keep proportion" and "Automatic

adjustment".

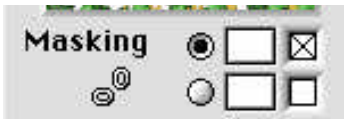
- **Validate by clicking on OK.**

The texture mapping dialog reappears and the "Leaves.tga" image is applied to the polygon support in the 3D scene.

- **Use the following tools to adjust the texture map:**

Repetition H & V

to repeat the "Leaves.tga" image over the entire material.



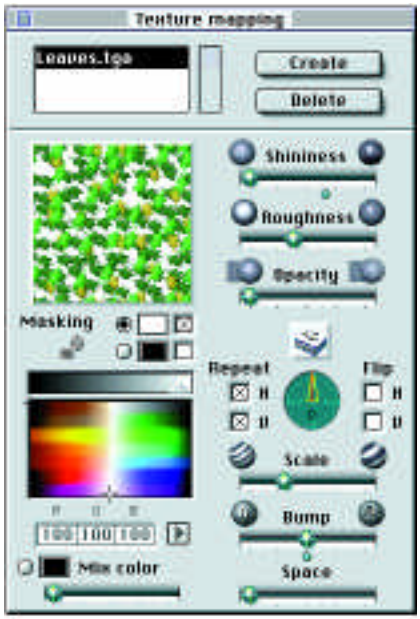
Mask

to suppress the white color in the "Leaves.tga" image.

Scale

to reduce the size of the image so it fits in with the rest of the scene.

The texture mapping dialog contains the following adjustment tools:



You've just simulated vegetation in the scene's background, quickly and easily.

Now place a person on the balcony:

• **Click on the orange face.** The dialog box for the shader opens.

Apply the mapped image as you did with the leaves:

• **Apply the "Invisible" shader (from the Decoration family) to the orange face.**

The material becomes invisible, but is still present in the scene and is used as a support for your texture map.

• **Check the "Apply texture" box at the bottom of the Invisible shader dialog box.**

The texture mapping dialog appears.

• **Click on "Create" then select "Girl.tga" in the dialog.**

Keep the default options: "Keep proportion" and "Automatic adjustment".

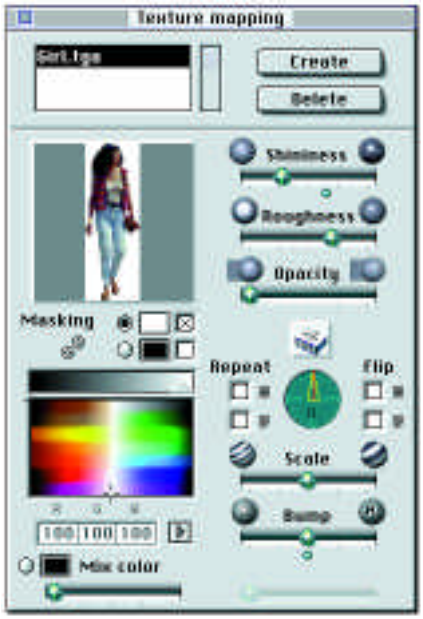
• **Validate by clicking on OK.**

The dialog box reappears and the “Girl.tga” is displayed in the 3D scene.

• **Adjust the texture map by using:**

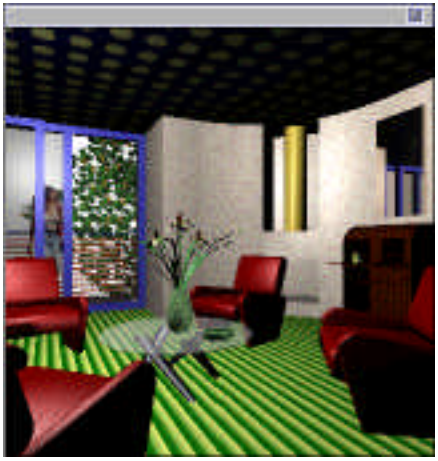
Mask

to suppress the white color in the “Girl.tga” image.



You've now finished preparing the scene. A comparison: while you could try to do the same work with an image retouching program, Art•lantis Render has a number of clear advantages:

- you can work quickly and easily.
- the luminosity of the texture maps automatically corresponds to the rest of the 3D scene.
- Art•lantis Render can automatically calculate cast shadows, reflection, and transparency for each mapped element.



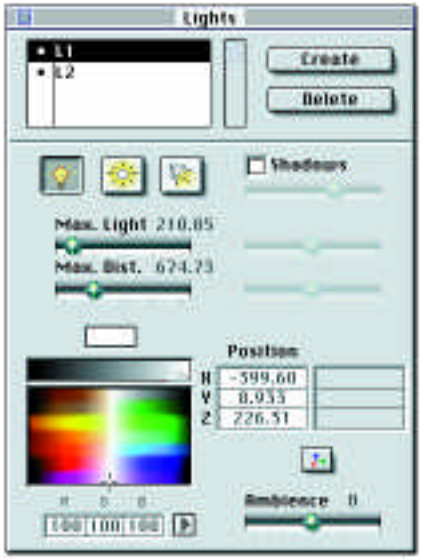
19. Modifying a scene's lighting

Objective

To modify a scene's lighting before launching the final rendering and to experiment with the "Cast shadows" option.

Having adjusted the materials and textures maps, you can now practice modifying the ambient light over the scene by changing from an interior lighting to an exterior "sun" light.

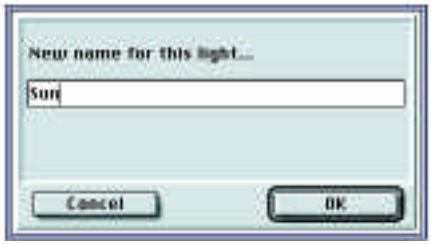
- **Select "Edit Lights" in the Windows menu.**



• **Diminish the intensity of the light named "L1"** to temporarily darken the scene's interior lighting: R=G=B=**70.**

To create a new light:

• **Click on the "Create" button.** A dialog appears in which you can type the name of the new source. Double-click on this light in the list and give it a name: "Sun", for example.



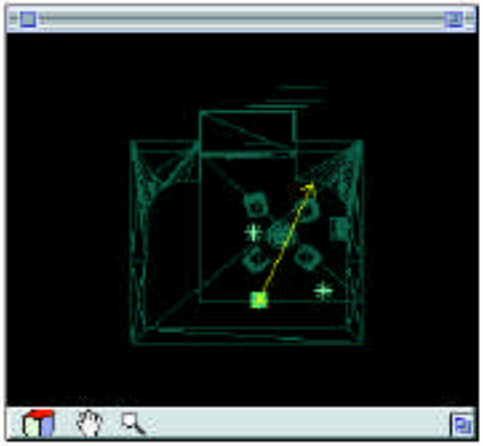
Modify the source's parameters:

• **Click on the "Sun" icon** to light the scene with a sun-type light.

• **Modify its intensity:** R=G=B=**100**

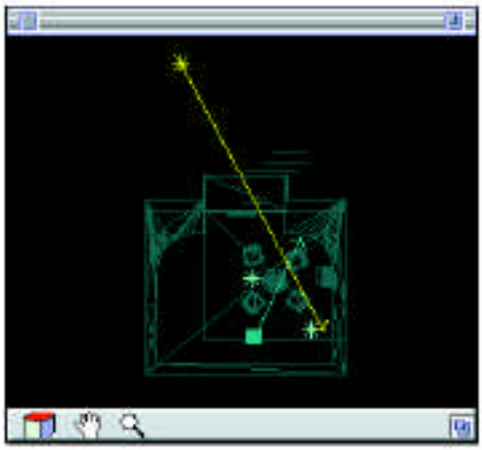
• **Check the "Shadows" box** to indicate that this source will cast shadows. Keep the value of shadow intensity at 80 to cast dark shadows.

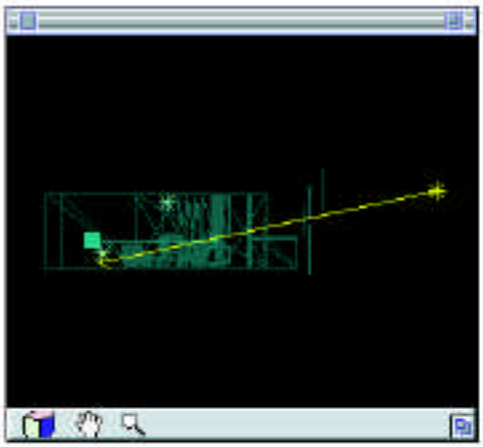
• **Click on the "Projected view" button** to change the source's position and direction.



In the projected wireframe view:

• **Move the active light source (Sun)** to position it outside the room. Use the cube icon to change the type of projection (top, front and side views are possible).





To precisely indicate the new position of the “Sun”, enter the following values:

	Position	Direction
X	-698	-90
Y	927	-218
Z	263	15

- **Close the “Edit Lights” dialog box.**

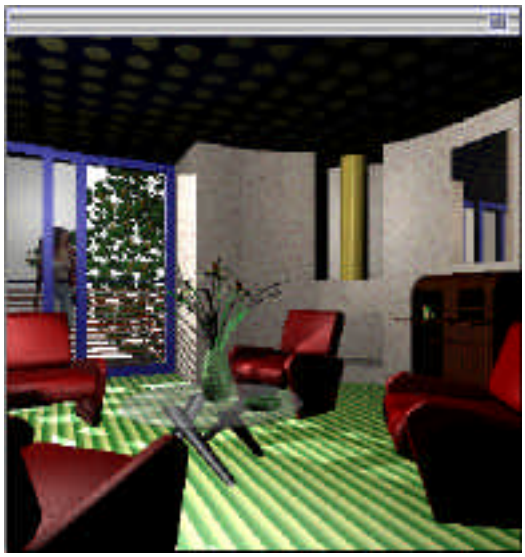
To give more contrast between the lit zones and those in shadow:

- **Click on the light in the projected view window to select it.**
- **Move the cursor toward the left of the Roughness gauge.**

To see how the cast shadows actually appear in relation to the light’s (“Sun”) position and direction:

- **Activate the “Cast shadows” and “Ray Tracing” options, then the “Recalculate” command in the Options menu.**

A general recalculation begins and you'll see the cast shadows in the preview window.



To improve the window's transparency and diminish the impact of the new light source on it:

- **Click on the window to select it.**

- **Slide the cursor to the right of the Roughness gauge and along the Shininess gauge to the left.**

20. Launching the final calculation

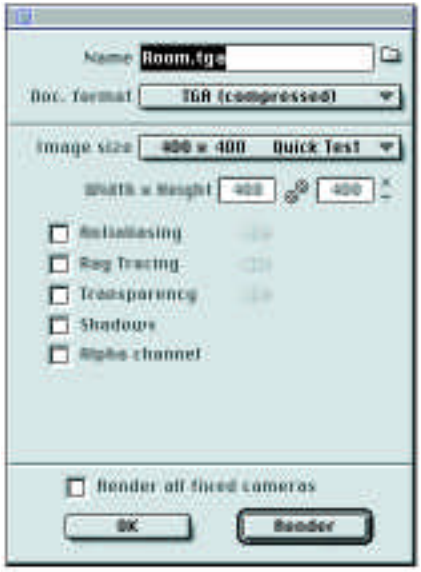
Objective

To choose the correct rendering parameters (based on the elements in the scene and the size of the image to be calculated), to adjust them, and to launch the final rendering calculation.

The final rendering calculation: this is the moment in which you see all of the adjustments you've made in the preview window together. We suggest that you launch your various calculations at night so as to keep your computer free during the day.

• Activate the "Render Fixed Cameras" item in the Render menu.

A dialog opens that displays the different rendering parameters:



• **Click on the “Folder” icon, select the “Tutorial 1” folder then click on “Select Tutorial 1”.**

• **Give the image a name, for example, “Room.jpg”.**

• **In the “ Format” menu, select “JPEG”.**

• **Select "1024x768" in the “Size” menu.**
In this dialog, there are nine different formats available: eight standard formats and one open (“Special”) format.

• **Activate "Antialiasing" (Good), “Ray Tracing,” “Transparency” and “Cast shadows” by checking their respective boxes.**

To save the final image calculation parameters: click on the OK button.

To launch the final rendered image:

Click on Render. Art•lantis Render launches the calculation based on the parameters you've specified.

You'll see a window that shows you how the calculation is progressing. Note that the calculation is carried out from bottom to top.

The window's size will change depending on the image definition you've selected. For higher definitions, Art•lantis Render resizes the calculated image in the window, while respecting the Height/Width ratio.

The window contains different information about the calculation:

- the time elapsed from the beginning of the calculation
- estimated calculation time remaining
- the size of the available memory

At the end of the calculation, the rendered document will appear in the same folder as the document containing your 3D scene and will carry the name you chose.
- **Room.jpg** in the **Tutorial 1** folder**.**