Exercise 2

The Heliodon & VR Panoramas

The following exercise consists of two parts:

1) The first part involves setting up the parameters for the heliodon and to prepare a sun study which applies the indicated parameters.

2) The second part consists of setting parameters and calculating 4 panoramic images, split into 2 groups, and creating hot spots to ensure navigation between both of the panoramic images.

1. The Heliodon

Objective *To establish the direction of sun rays as determined by a certain number of parameters so that you can create the sun study of a project.*

Macintosh

Windows

• **Launch Art•lantis and open the file "Wooloo Start", which is found in the "Tutorial 2" folder, which is in turn contained in the "Tutorial" folder.**

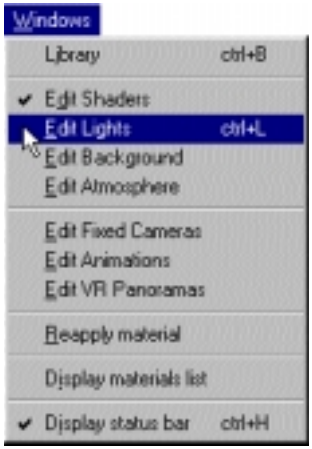
Once the file is open, the scene is displayed in the Preview window. This is what you should see:

The scene's parameters have already been decided for you, so that you can concentrate on creating your panorama. Take note of the preview window, as it contains the totality of the material's effects.

- two shader colors on the beach chairs
- chrome and reflection shaders on the 4x4 Jeep
- wood shaders on the house

- texture map with bump on the ground to look like sand
- texture map for the sign on the roof
- texture map on the facade for the young woman who is sitting in the background on the sand
- lighting with sun and other bulb lighting

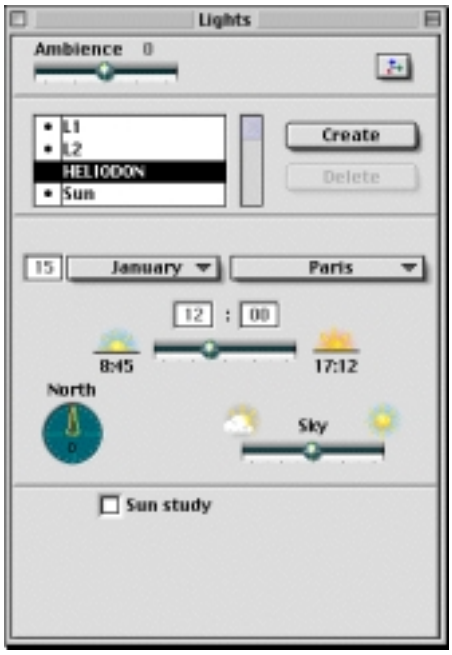
A background image (3D background) is used to add realism to the scene. You will find that there are other effects that will be noticeable at the end of the exercise that were not able to be observed at the start.



• **Activate the "Edit Lights" item of the Windows roll-down menu.**

In the Lights interface, you will see a list of lights containing an item named "HELIODON." Opening a file always gives you a heliodon which contains defaulted parameters.

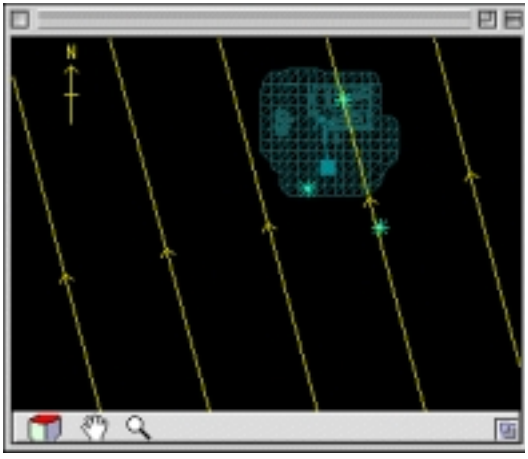
Clicking on the “HELIODON” item changes the Lights dialog box to look as follows:



Notice that as you select the “HELIODON” item, the Preview window is refreshed to reflect this light source. In order to see the window update, however, make sure that you activate the Heliodon light source by clicking one time to the left of it so that a black dot appears.

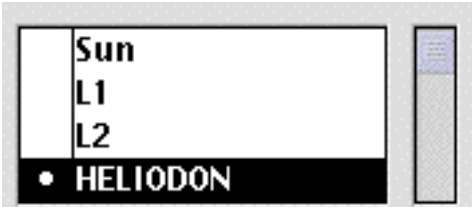
• Display the Projected view window by clicking on the icon located at the upper, right corner of the Heliodon dialog box. The icon is shown to the left of this paragraph.

You will notice in the Projected view window that the sun rays are represented by parallel, yellow lines, and that the North direction is pointed to by the arrow heads on the parallel lines. This is what the Projected view window looks like.

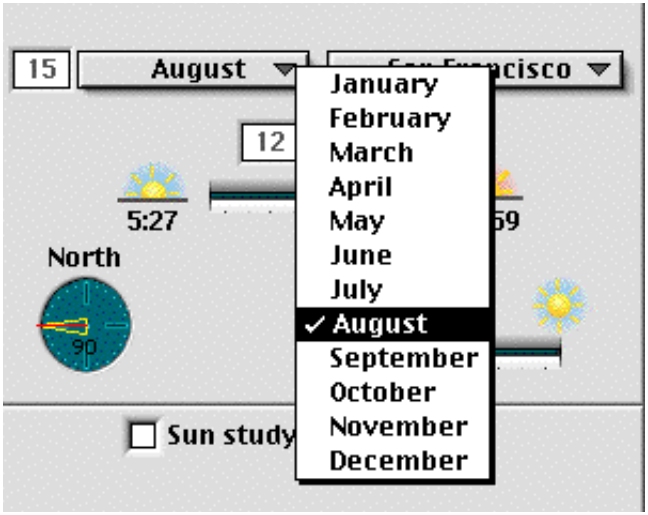


• Deactivate the lights L1, L2 and Sun by clicking on the left

side of each. Their black dots should disappear so that the list of lights looks as follows:

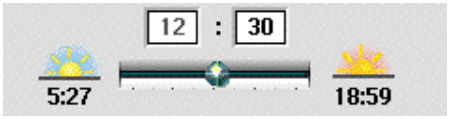


• In the Heliodon dialog box, select the month of August.



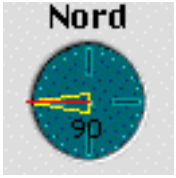
- **In a similar manner as the date, select San Francisco.**

Selecting the month and a city has an important impact on the light cast on your design. You will notice that, based on these parameters, Art•lantis indicates the times corresponding to dawn and dusk.
You may further regulate the Heliodon light by specifying a time in the dialog box as follows:



In addition to the previous parameters, you may also change the North direction and immediately see the effect of this change in the Preview window.

- **Rotate the compass in the interface in a counter-clockwise direction so that you reach a 90 degree angle, as reflected on the compass itself.**



- **Slide the sky gauge towards the right so that the intensified sunlight results in darker shadows in the scene.**

In the Preview window , the 3D scene corresponds to a sunny day in San Francisco at 12:30 PM. It should look like this.

You may modify the placement of the sun in the scene by entering a different value in the time fields.

• **Type the time 11h15 in the hour/minutes fields of the interface and see how your scene changes immediately in the Preview Window. It should now look like this:**

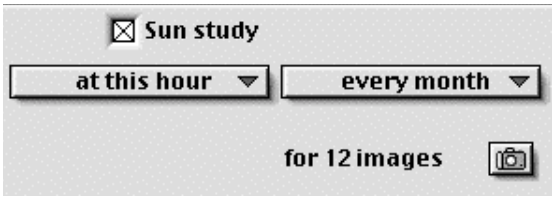
You may change the all the parameters we just discussed and see how your scene changes in the Preview window.

2. Sun study

Objective

To choose the rendering parameters and to launch a sun study calculation.

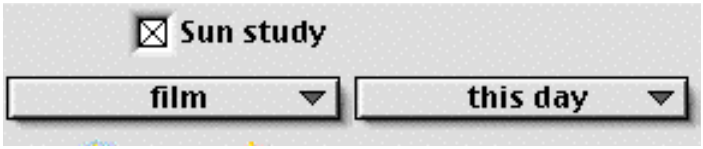
• Click on the "Sun study" checkbox of the Heliodon interface as shown below.



Notice that the two buttons shown above are included in the interface as soon as you check the box.

• Select the "film" option of the roll-down menu which appears as you click on the left button. The roll-down menu looks like this:

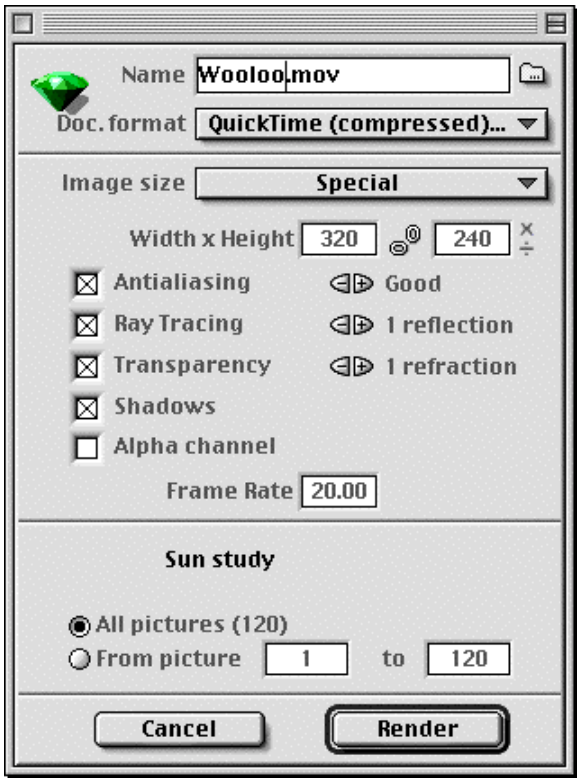
• **Leave the right button as “this day”.**



• **Indicate the time interval for the sun study.**

• **Click on the little camera in the lower, right corner of the interface.**

Clicking on the camera displays the following dialog interface.



• Click on the folder icon (see left margin) and then click on the folder "Tutorial 2" from the resulting dialog.

• In the resulting dialog, click on the long button which reads "Select 'Tutorial 2' folder"

• In the Name field, replace the "Sun Study.mov" name with the name "Wooloo.mov".

• In the "Doc.format" field, select the "QuickTime (compressed)" option.

• For the "Image size", select the first item in the menu. That is, select the size " 320x200 VGA". This will be the size of the film and the size of the screen in which it will be played.

• Check the rendering options as follows:

• **Click on the following option as well.**

• **Click on the "Render" button in order to commence rendering.**

At the end of the rendering process, a new file will be created in you "Tutorial 2" folder. Its name, as specified before, will be "Wooloo.mov" .

In order to visualize your new film, simply ...

• **Double-click on the "Wooloo.mov" file.**

3. Edit a Panorama

Objective

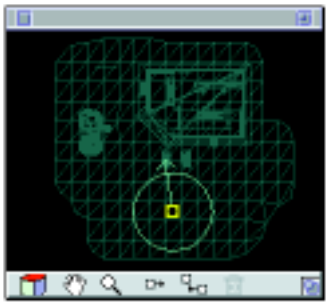
To activate the "Edit VR Panoramas" menu and calculate the first panorama.

• Select "Edit VR Panoramas" in the "Windows" menu.

This lets you access 3 control windows: the "Panorama" dialog box, the preview window and the projected view window.

In the dialog box, there is already an existing panorama: **Panorama 1.** By default, the existing panorama corresponds to the fixed camera.

• Click on the "projected view" icon to display and view the position of the panorama within the 3D scene.



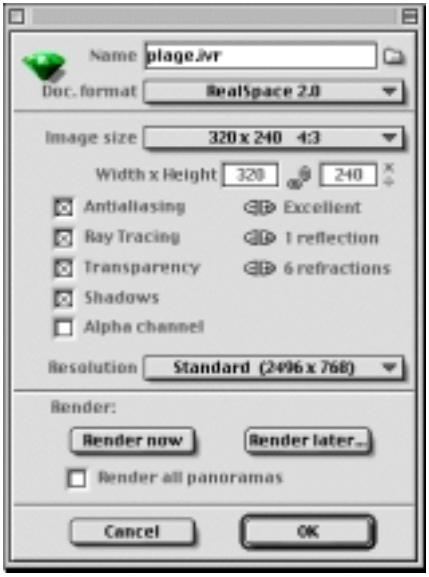
• Click on the end of the arrow, holding down the mouse button and move it in a circular movement around the circle.

In the preview window, the scene will move 360° around a fixed point and will be displayed in real time and in low definition in the preview window.

• Put the arrow back at its initial position in order to keep the original frame in the panoramic view.

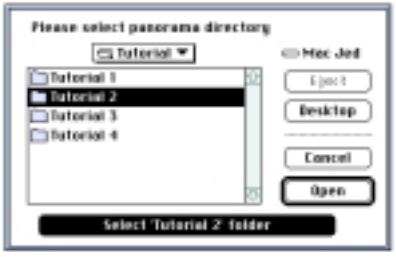
Now you need to calculate your first panorama. This allows you to immediately visualize and move in real time within the image using QuickTime VR or RealSpace.

• Select "Render VR Panoramas" from the "Render" menu, and use the following parameters:



To render the VR panorama, choose the location where it will be stored. You should have previously copied the Tutorial files onto your hard disk.

• Click on the "Folder" icon, select the "Tutorial 2" folder then click on "Select 'Tutorial 2' folder".



• **In the Name field, type "Beach1".**

• Click on "Render now" to begin the calculation of the panoramic image.

When the calculation is finished, Art•lantis will create a "Beach1" file in your "Tutorial 2" folder.

• Temporarily close Art•lantis (don't worry about saving for the moment).

Make sure that you have correctly installed RealSpace or QuickTime, which is located in the "Animations" folder on Art•lantis' CD-ROM.

• Open the "Tutorial 2 " folder and double click on the "Beach1.ivr" (on Windows) or the "Beach1.mov' (on Macintosh or Windows) file.

• When moving within the image, hold down the mouse button and move the cursor to the left and right of the window in a 360° circular motion.

Using the same technique, you can move on a vertical axis up and down in relation to the image (the vertical focus is set at 87°).

You have just successfully navigated within your first Art•lantis calculated virtual reality panorama.

4. Edit a second Panorama

To create a second VR panorama and determine the hot spots through which you can freely navigate between two views.

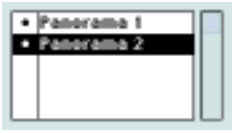
Objective

You are now going to create a second panorama which will be connected to the first via a link. The link between several panoramas will create a passage, within the same 3D scene, which will connect one panoramic view to another. Once created, the two panoramas will constitute the first group.

• Double-click on the "Wooloo Start" file in the "Tutorial 2" folder to start-up Art•lantis again.

• Activate "Edit VR Panoramas" from the "Windows" menu and click on the ''Create'' button in the ''Panorama'' dialog box. This creates a second panorama in the list.

Note that the information ''Number of groups'' is located under the list of panoramas and has a **2** listed. A group contains one or several panoramas that can be linked together. For the moment, two panoramas exist and are independent and belong, ergo, to two distinctly different groups.



• Click on the ''projected view'' icon to display and

view the positioning of the two panoramas.

A newly created panorama is positioned in the same place as the one that was already existing or chosen, by default.

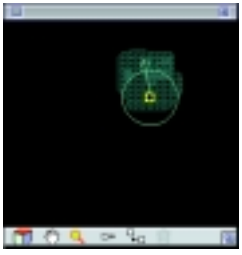
Remark:

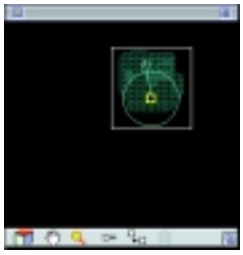
This also applies to new fixed cameras.

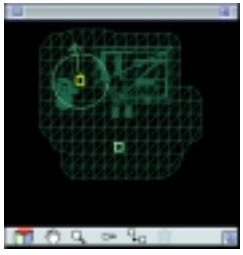
Moving the new panorama:

• Click on the yellow square to select it and hold down the mouse button, moving it near the back on the car and then release it.

The view is modified in real time in the preview window. Don't hesitate to zoom in on the projected view window, using the magnifying glass to help you do this:







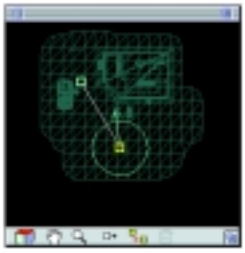
5. Creating a link between panoramas

Objective

To create a link between both panoramas and choose the starting point view for each panorama.

While navigating between views when visualizing the final result with the QuickTime VR or Real VR player, you must link the panoramas, indicating which panorama is to be used first:

• Click on the yellow square of the first panorama (Panorama 1), then click on the "Link" icon (shown here on the left margin) to create the link. Then select the second panorama by clicking on its yellow square.



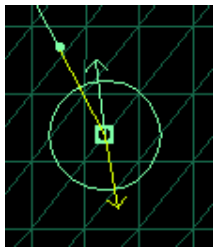
These two panoramas are now linked (this is visible only in the "top" view of the Projected view window):

When selecting the two panoramas alternately, you will note that the first panorama (**Panorama 1**) contains two arrows, while the second panorama (**Panorama 2**) only has one.
In effect, each panorama contains one arrow that represents the displayed view that is used when reverting back to the preceding panorama. The initial panorama (**Panorama 1**) is indicated by its square with a hole symbol, and contains an extra arrow that corresponds to the starting image of the group.
Now that the two panoramas are linked, note that the ''Number of groups'' is **1**.

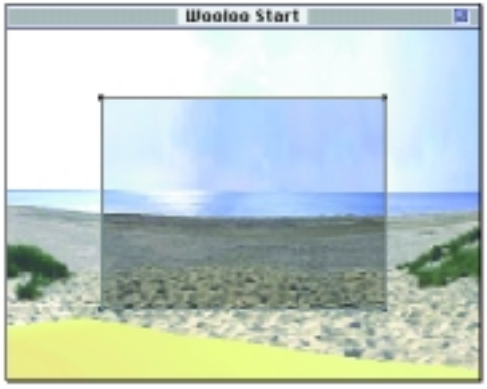
Adjusting the views for each panorama:

• **Select the starting panorama**: the circle appears with the two arrows. The arrow that indicates the starting view for the group is aimed in the same direction (towards the house):

The second arrow is the one that indicates the displayed view as soon as you return to the second panorama:



• Click on the end of the arrow and move it in a circular motion around the circle to aim at the ocean:

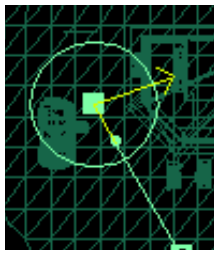


The view modifications can also be changed using the preview window directly:

• Click in the preview window and now hold down the mouse button while moving the cursor's arrow to the right or to the left.

The rectangle that appears in the window shows the limits of the visible portion of the panorama, once the panorama is displayed, that is.

• Select the second panorama and click on the end of the arrow, moving it in a circular motion to aim at the house:



The starting image for the second panorama is established. In the preview window, you can still adjust the size (enlarge or zoom) and depth of the panorama.
To obtain a larger frame:

• Click on one of the 4 corners of the rectangle and enlarge the rectangle.

To modify the depth factor and improve the framing of the surf boards:

• Click on one of the horizontal edges on the rectangle and while holding down the mouse button, move it towards the bottom.

6. Determining hot spots

Objective

To create a linking hot spots between two panoramas and choose the starting views for each VR panorama.

You now must determine the hot spots, that is to say the sensitive zones that will allow you, with a single click, to navigate from one panorama to another in the final scene.

• **Click on the first panorama (Panorama 1).** In the projected view window, please note the point that is found on the connecting line (link) that connects the two panoramas. This point, called a node, defines the hot spot when moving towards the second panorama.

• **Click on the node and hold down the mouse button moving it towards the car:**

In the preview window, the hot spot is represented by a polygon:

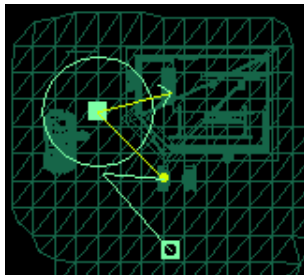
In order for the car alone to be in the hot spot:

• **Move the sides of the polygon by clicking on its corners, by doing this you are changing the shape of the polygon to fit the shape of the car:**

In order to define the hot spot in the second panorama, proceed in the same manner:

• **Click on the second panorama (Panorama 2).**

• **Click on the node while holding the mouse button and move it by pulling it near the beach chairs:**



• **Alter the polygon by clicking and moving each corner to make the contours of the polygon correspond to those of the two deck chairs**:

You have created the first group which contains the 2 panoramas. Before you create the second group, save the modifications.

If you wish to redo these exercises, you need to copy the starting files from your CD-ROM to your Tutorial folder on your hard drive.

7. Creating a second group

Objective

To create a second group with two new panoramas using "Edit Fixed Cameras" in the ''Windows'' menu.

The creation of one or several panoramas can also be done by using the contextual menu in ''Fixed Cameras''. With this method you can create two fixed cameras which make up the second group of panoramas.

Creating the first fixed camera:

- **Activate "Edit Fixed Cameras'' from the ''Windows'' menu.**

- **Create a new fixed camera by clicking on the ''Create'' button.**

In order to modify the name of the fixed camera:

- **Double click on the default name in the list called ''V2''.**

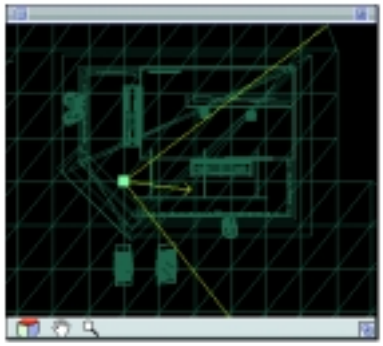
- **Display the projected view window.**

Just as with the panorama mode, the new fixed camera takes on the same characteristics as the last fixed camera that was selected.

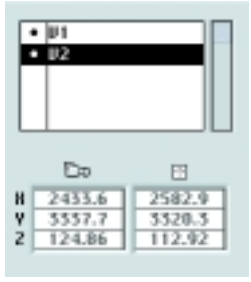
In order to move and position to the house's porch:

- **Click on the square that represents the fixed camera position and hold down the mouse button, moving it to its new position.**

Repeat the same operation with the aim by clicking on the end of the arrow. Use the icon to change the projection and raise the fixed camera and aim as follows:



The dialog window gives you the precise coordinates for the fixed cameras:

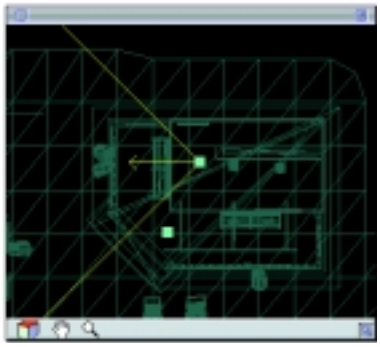


Creating the second fixed camera:

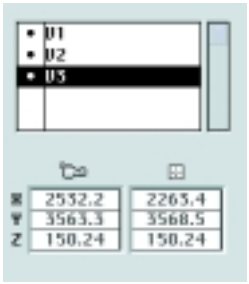
• Click once more on the ''Create'' button and double click on its name in order to rename it ''V3''.

The coordinates for the fixed camera are identical to those of V2.

• Move it to position it inside the house as follows:

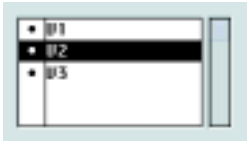


The dialog box gives you the exact coordinates of the fixed cameras:

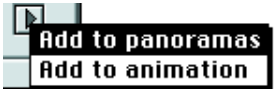


You have now created two more fixed cameras. To transform then into panoramas:

• **Click on the fixed camera "V2" in the list to select it:**



• **Click on the contextual menu icon while holding down the mouse button, choosing:**

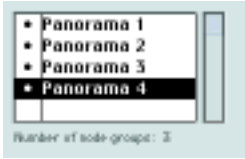


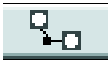
• **Repeat the same operation with the "V3" fixed camera.**

These two fixed cameras have now been added to the list of panoramas.

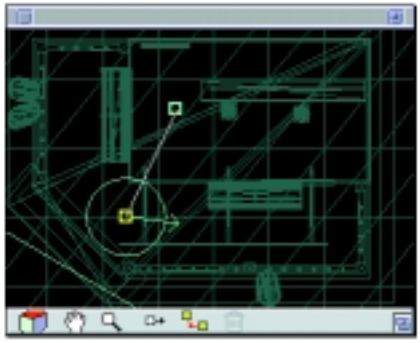
• **Select "Edit VR Panoramas" from the "Windows" menu**. The list now contains two extra panoramas.

• **Double click on V2, then V3, to rename them "Panorama 3" and "Panorama 4":**





• **Edit the Projected view window, selecting Panorama 3 (view on the porch) and create a link with Panorama 4:**



Under the panorama list, the **number of node groups** is **2**. Two groups each containing 2 panoramas.

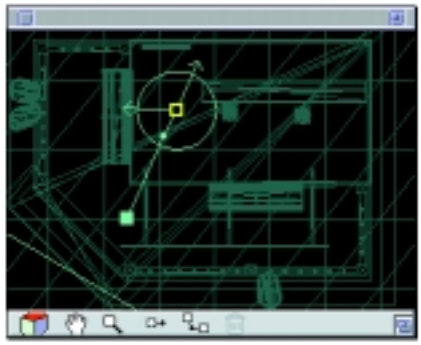
Panorama 3 is for the moment the beginning panorama (the yellow square with the hole) from 2 group, as it was selected first when the link between **Panorama 3** and **Panorama 4** happened**.**

To inverse the process and have panorama 4 begin the group sequence :

• **Click on the Panorama 4 square to select it.**

• **Click on the beginning panorama icon located in the tool bar.**

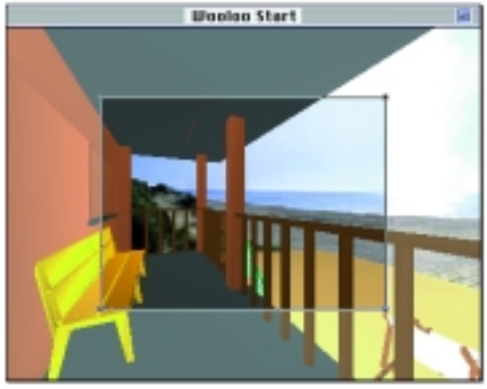
The change is made. **Panorama 4** is now the beginning panorama for the group (the yellow square with the hole):



As with each group, you must adjust the starting view for each panorama, as well as the hot spot for navigation.

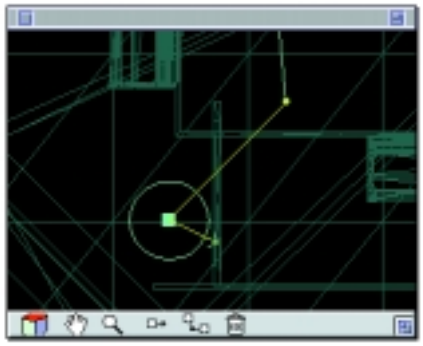
For **Panorama 3:**

• **Click on the square to select it, and turn the arrow to obtain the following frame:**



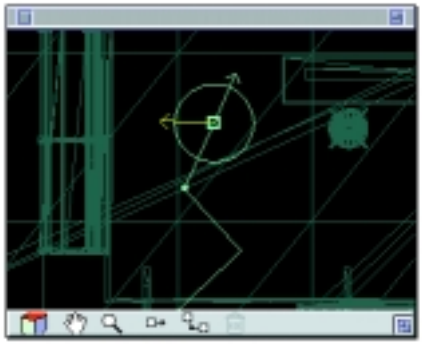
Adjusting the hot spot:

• Select the node by clicking and position it in front of the bar, which is located inside the room, then reshape it to adapt it to the shape of the bar:

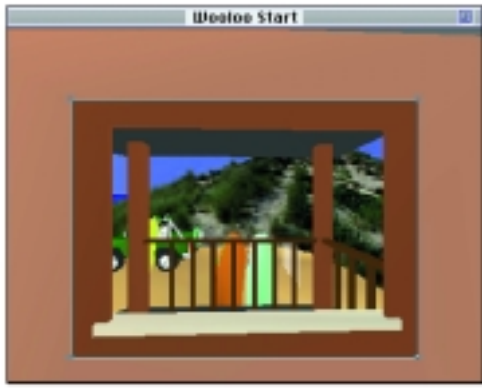


Panorama 4:

• Click on its square and select the arrow which represents the starting view for the group:



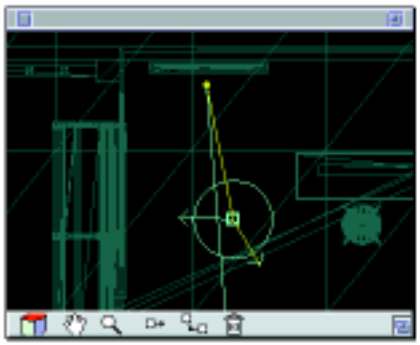
• Turn the arrow in order to obtain the following frame while enlarging the rectangle and moving it towards the bottom:



• Select the second arrow to adjust the displayed view while returning to Panorama 3 and move it towards the outside of the house as follows:

Adjusting the hot spot:

• Select the node by clicking and move it in order to position it in front of the mirror, which is located inside the room, then reshape it to adapt it to the mirror's shape:



In the final panoramic view, the mirror reflects the porch, when you click on it, you will pass back to the second exterior panoramic view.

By choosing the mirror as the hot spot, we have included a friendly clue to help with navigation. When you are determining hot spots to pass from one panorama to another, logically the hot spot should be a door, a window, a mirror, etc.

The parameters for the second group are now completed. Your 4 panoramas are ready for the final calculation.

Before you start your calculations, save your file.

8. Launching the final calculation

To choose the rendering parameters and start the final calculation for the four panoramas.

Art•lantis calculates as many images as there are panoramas. With the ''Wooloo Start'' file that you have just saved, 4 panoramic images will be calculated. Please take note of the fact that with a desk top computer of average power, the calculation time for the totality of the 4 images is 35 minutes.

• Activate "Render VR Panoramas" from the "Render" menu. The following dialog box appears:

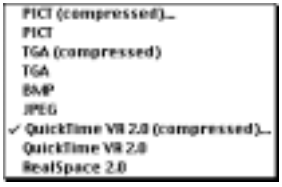
• Name the panoramas that you wish to calculate: "Beach2".

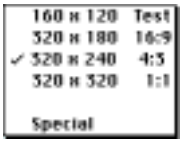
• In the **"Format" menu,**

- choose "RealSpace 2.0" (Windows 95 and NT, Mac)

or

- choose "QuickTime VR 2.0 (compressed) (Mac only)





• In the **"Size"** menu,

- ignore the parameters if you are using "RealSpace" (the size of the window is set by the RealSpace player),

or

- choose "320 x 240" if you have picked the "QuickTime VR" format (QuickTime VR opens a 320 x 240 window with a 4:3 ratio).

• Check the calculation options: Antialiasing (Good), Ray Tracing, Transparency, Shadows.

• Choose the "Standard (2496 x 768)" resolution.

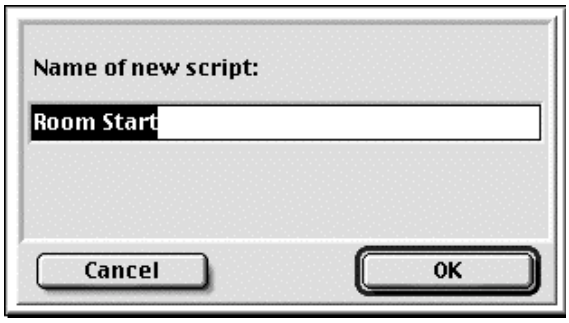
• Check the "Render all panoramas" box. In the opposite case, only the last panorama will be calculated.

• Click on the "Render now" button to start the calculation immediately.

In order to defer the final rendering calculation, do as follows:

- Click on the button "Render later..."

- Enter the name "Wooloo" in the resulting name dialog.



- Click on the OK button to validate the deferral.

The deferred rendering is then represented by a script which will be ran with the specified parameters. The script has the name **"Wooloo.txt"** and is saved in a folder named Scripts, located in the Art•lantis folder.

In Exercise 4, we will see how to launch the collection of deferred renderings.

At the end of the calculation, two new files (or folders) will be created in you "Tutorial 2" folder, each will contain a group of panoramas.

Example in RealSpace format:

Your ''Tutorial 2'' folder contains 2 folders "Beach2_A" and "Beach2_B''. Each contains a ".ivr" file and the two panoramic

group views are in JPEG format.

example in QuickTime VR format:

Your ''Tutorial 2'' folder contains two folders ''Beach2_A.mov" and "Beach2_B.mov".

To view the panoramas:

- **Double click on the files ".mov" or ".ivr".**