

# LightWave 3D Flying Dragon - Layout

## The User Interface

Start LightWave Layout – click on the *LightWave Desktop Icon* on the desktop OR click on *Start/Programs/LightWave/LightWave7*



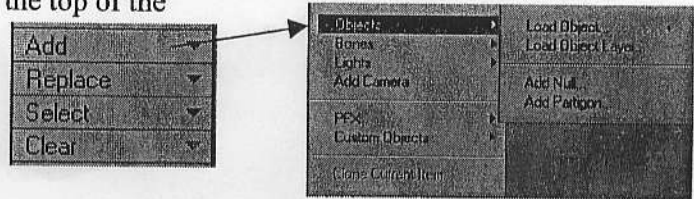
You will notice that you have one maximized Perspective view, tabs across the top of the interface, and different object selection modes at the bottom left area of the screen.

As well, you will notice at the top right area of the view are your **zoom selection, pan, rotate and zoom view** buttons. All you need do is put your cursor over any of these buttons and left mouse (LMB) click & drag to navigate and perform the action. On the left area of the view are your options to change to another type; **none (disables the view) Top, Bottom, Back, Front, Right, Left, Perspective, Light View, Camera View, Schematic View**. Also, if you LMB click & hold you and navigate your mouse to **Maximum Render Level**, go to the right arrow, you can set the view render type to **Bounding Box, Vertices, Wireframe, Front Face Wireframe, Shaded Solid, Texture Shaded Solid**.

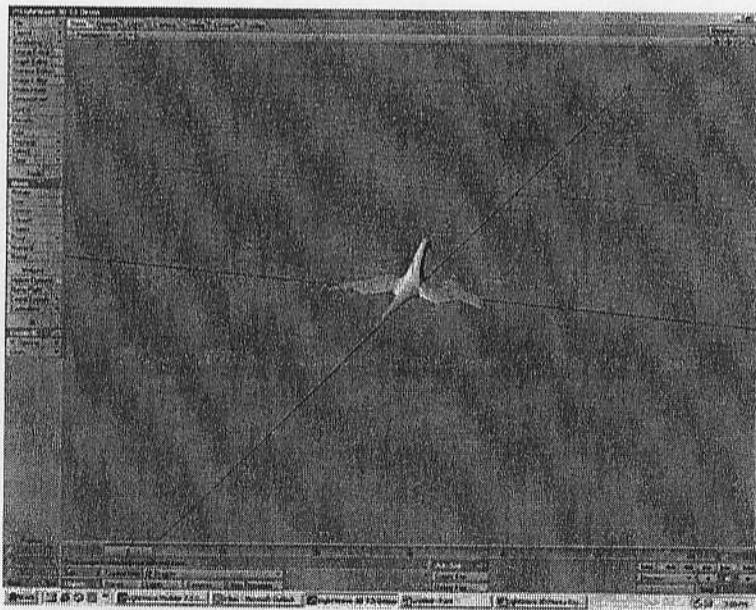
## Loading Objects

In order to load an object into Layout, you must first create and save one from LightWave Modeler. This tutorial assumes the reader has created the dragon.lwo.

- 1) In Layout select the **Items** tab at the top of the interface, LMB select and hold the **Add** command. In the resulting new dialog box, go from the **Objects** menu and navigate your mouse to the **Load Object** option.



- 2) Load the Dragon.lwo
- 3) The Dragon object should now appear in the **Layout** interface.
- 4) Using the **Zoom** tool, zoom out in the **Perspective View** until the Camera is visible.



## Animating Objects

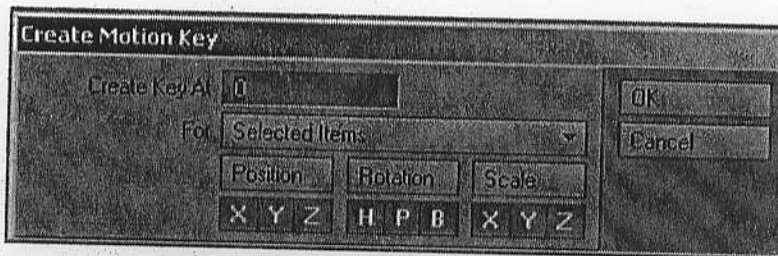
NOTE: In traditional cartoon animation, there are generally two types of animators. Based on the storyboard, which dictates how characters move and act, the head animator draws all of the major key poses. The head animator then passes these drawings to the animators who draw the in-betweens, hence in-betweeners.

A moment in time where an action starts is called a **KEYFRAME**. LightWave 3D puts you in the head animator's seat, drawing all of the in-betweens for you.

The dragon is going to be infinitely repeating a fluid up and down motion. We are currently on frame 0. This will be the start frame (keyframe) where the dragon will start to move up. It's very easy to create keyframes in LightWave Layout.

5) In the lower area of the user interface, make sure the **Object** button is selected, and the **Current Item** entry reads *Dragon*. This ensures the right object is selected for animation.

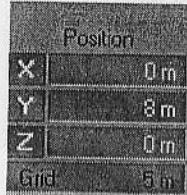
6) Press **Enter** on the keyboard. A **Create Motion Key** dialog box prompts to inform you of which frame is the keyframe and what channels are being keyframed. Click **OK** to accept this keyframe for frame 0



NOTE: Every object has a center pivot point from which they move, rotate and scale around. Each of these move, rotate and scale characteristics are given three axes. Move XYZ, Rotate HPB (Heading, Pitch and Bank, same as XYZ for clarity) and Size XYZ

7) In the timeline, place your mouse over frame 50 and LMB click to snap the **time indicator** to that time.

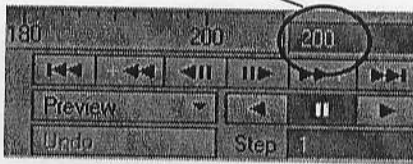
- 8) Make sure you have the **Items** tab selected at the top of the interface and the **Move** tool is active as well. In the lower-left area of the interface you will find three fields for **XYZ** for exact numeric input. Highlight the **Y channel** with your LMB, type **8m**.



- 9) Press **Enter** on the keyboard to create a keyframe for this value at frame 50. Click **OK** to accept.



- 10) Just above the playback **transport controls**, you will see an **editable field** where you can numerically set how many frames display in the timeline. Highlight this field with the LMB and enter **200**.



- 11) Place your mouse over frame 0 in the timeline. LMB click to snap the **time indicator** back to frame 0.



- 12) Press **Enter** on the keyboard to bring up the **Create Motion Key** dialog box.
- 13) Beside the **Create Key At** field, enter **100**. This field is automatically highlighted for you whenever you press **Enter** on the keyboard.

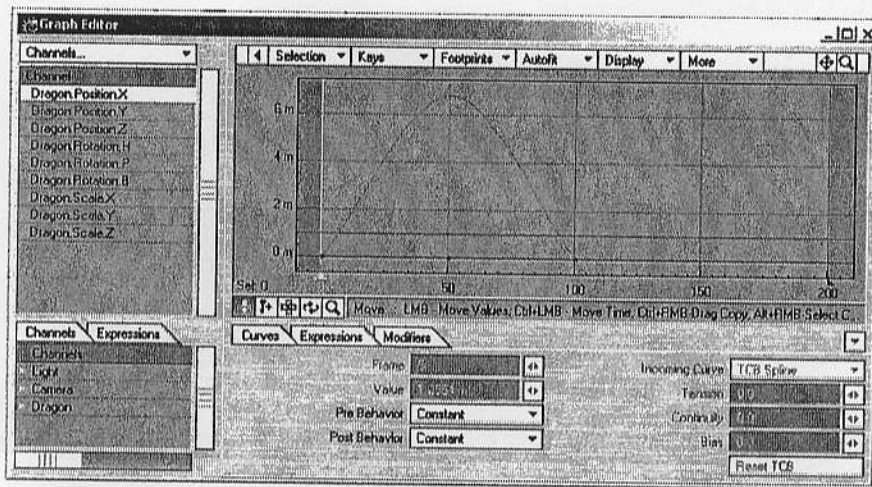


- 14) Place your mouse in the timeline at frame 0, LMB click-drag to the right towards frame 200.

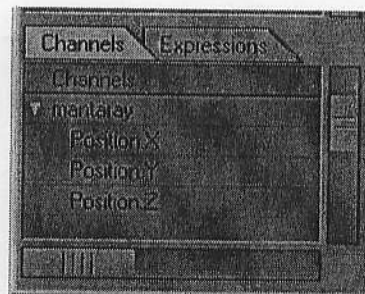
NOTE: As you drag the time indicator past frame 100 you may have noticed that there is no more animation happening. What we need to do is infinitely repeat this up and down motion with ease. We will use the Graph Editor to perform this task while viewing our animation over time in curves for a great visual representation.

### The Graph Editor

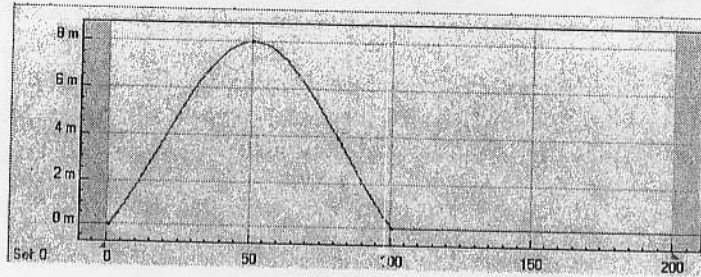
- 1) At the top left area of the user interface, select the **Graph Editor** button.



- 2) In the lower left area of the **Graph Editor**, under the **Channels** tab is a list of all objects currently in this LightWave 3D scene. Click the **white arrow** beside the name "Dragon" to expand its **XYZ channels**.
- 3) Use the scroll handle to the right to scroll down until you see **Position Y**.

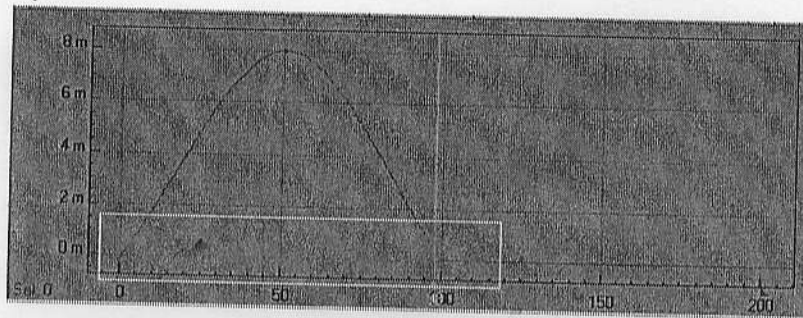


- 4) LMB double-click the **Position Y** channel to display a large green curve with the three keyframes we created in the upper right area of the **Graph Editor**.



- 5) Place your mouse beside and just above the last keyframe at frame 100 and RMB click-drag diagonally down towards and over the keyframe at frame 0.

This is how you marquee select keyframes in the **Graph Editor**.



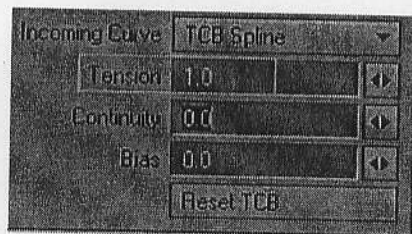
- 6) In the lower right area of the **Graph Editor**, set the **Post Behavior** setting to **Repeat**.

**Post Behavior** is what happens **after** the last keyframe. This setting allows us to infinitely repeat our animation based on three keyframes.

- 7) Repeat the previous step for **Pre Behavior** by setting it from **Constant** to **Repeat**.

- 8) In the lower right area of the **Graph Editor**, you will find a setting called **Tension**. With the LMB, highlight the field next to it and type in a value of **1.0**. Close the **Graph Editor**.

What we have just done with the **Tension** setting is infinitely smoothed out the curve. Next we will bring the manta ray to life.

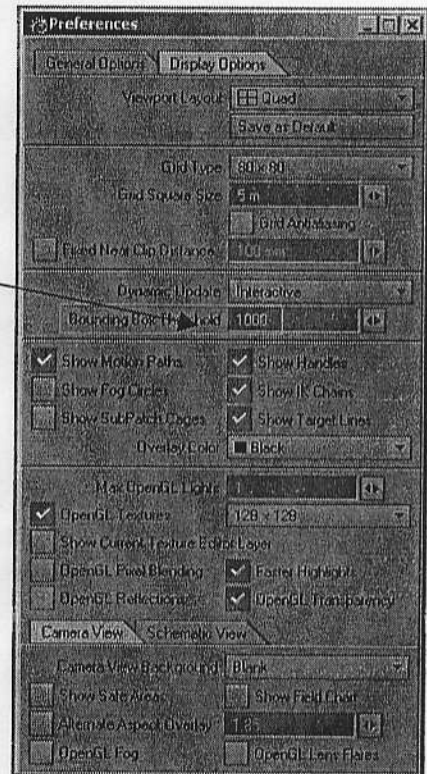


## Adding Inertia

Most 3D software requires the user to purchase a third party plug-in to increase the functionality of the program. Off the shelf, LightWave 3D has everything a creative professional needs to create photo realistic animations.

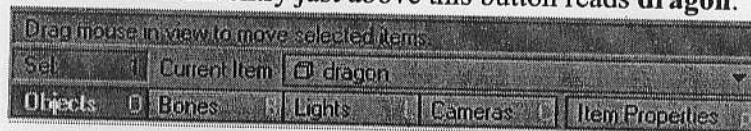
What we are going to do is utilize a LightWave add-on called Inertia to flap the wings of the dragon. First we will make sure our display settings are correct in order to play the manta ray animation from the transport controls at real time.

- 1) In the upper area of the user interface, go to the **Display** tab.
- 2) Under the **Display** tool group, select the **Display Options** button.
- 3) In the middle area of the resulting dialog box, you will find a setting called **Bounding Box Threshold**. Set the value to **2000**.



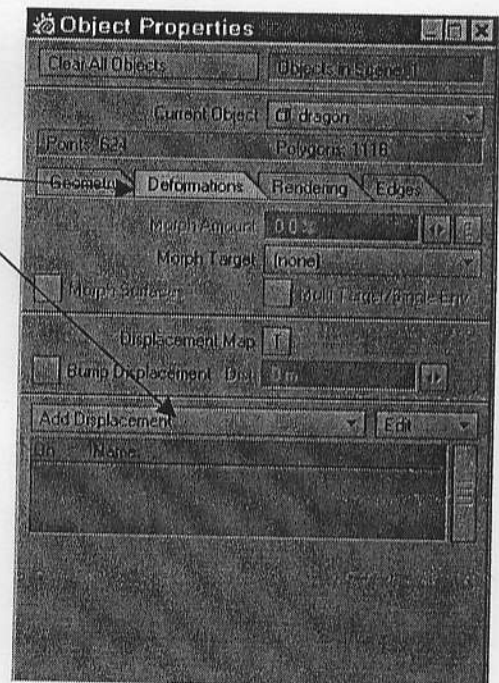
If you were to select the dragon, then select the **Item Properties** button located at the bottom of the interface; you will see a **Polygons** entry showing you the total number of polygons that make up the dragon object. If this number is higher than the number showing in the **Bounding Box Threshold** found in the **Display Options** dialog box, pressing the play button in the playback transport controls area causes the dragon to degrade to a wireframe box in order to keep up with a real-time display.

- 4) Make sure the **Objects** button is selected in the lower left area of the user interface and that the **Current Item** entry just above this button reads **dragon**.

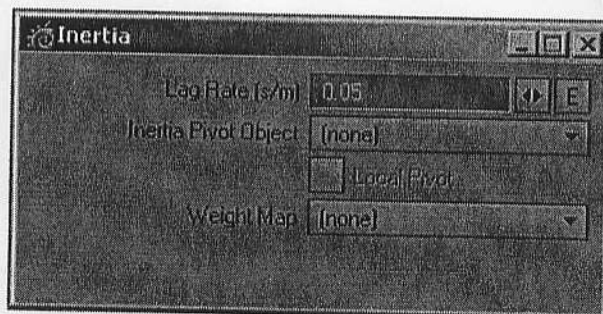


- 5) Select the **Item Properties** button next to the **Cameras** button at the bottom area of the interface.

- 6) Select the **Deformations** tab and LMB click-hold the **Add Displacement** button to navigate your mouse to and select the **Inertia** add-on.



- 7) Double-click the **Inertia Lag [s/m]** setting to bring up the **Inertia** interface.
- 8) In the resulting dialog box, beside the **Lag Rate [s/m]** entry, enter a value of **.05**





- 9) Close all of the dialog boxes. Press the **Play** button on the playback transport controls area of the user interface.

## Smoothing Objects

### The Surface Editor

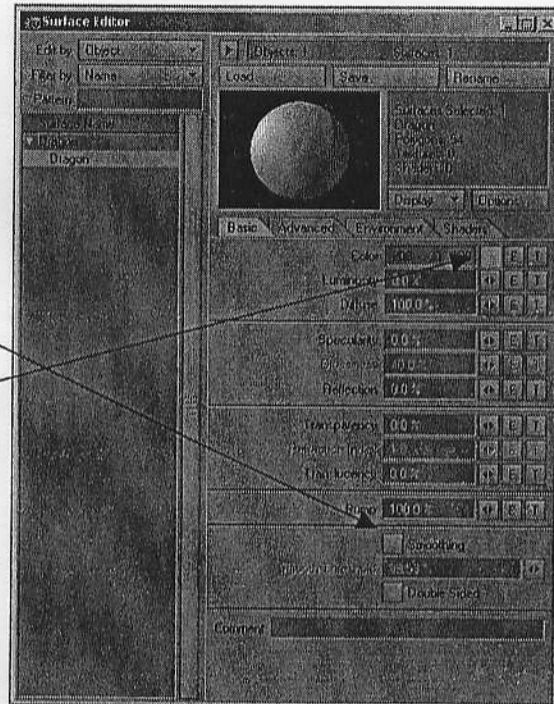
- 1) Select the **Surface Editor** button found in the left side menu.

The resulting dialog box is the **Surface Editor**, which we use to color, texture and smooth objects.

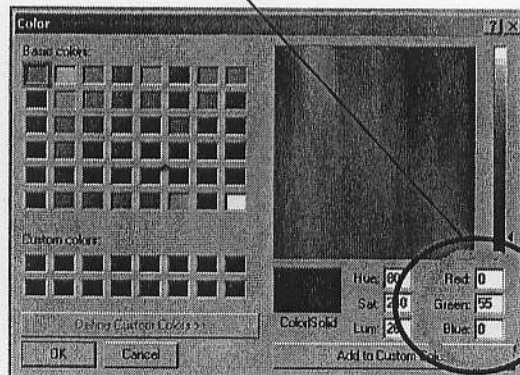
- 2) In the lower right area of the **Surface Editor**, LMB click to place a checkmark in the box next to the **Smoothing** setting.

- 3) Click in the gray box to bring up the color picker.

Close the **Surface Editor** dialog box.



- 4) For the Red, Green and Blue entry fields at the bottom right area of the color picker and give them their respective values: 0, 55, 0. This will give the dragon a dark green color. Close all dialog boxes.



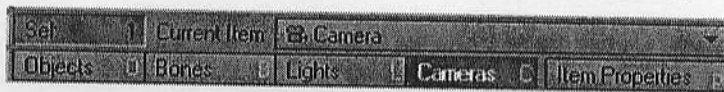
## Animating Cameras

### Understanding Target Objects

When placing cameras in a 3D scene, it's a great asset to have the camera constantly target itself at any desired object. This is very advantageous because all you need do is move the camera into position. You don't need to rotate it to face the object in question for the shot you are trying to accomplish. This eliminates an extra step in your workflow, therefore increasing your productivity.

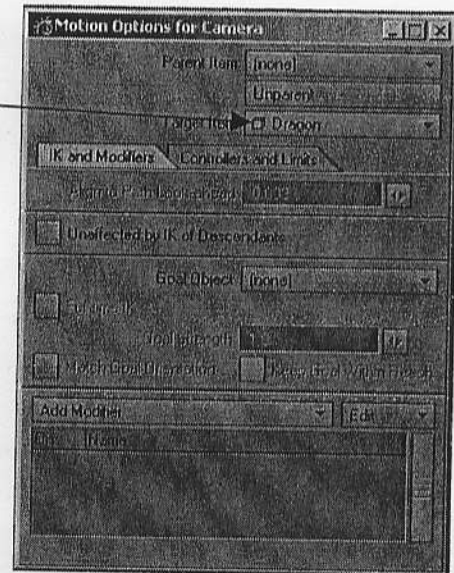
We will now add the dragon as a target item for the camera for easy camera placement.

- 1) In the lower area of the user interface, select the **Cameras** button.



- 2) Make sure you have the **Items** tab selected at the top area of the user interface, under the **Motions** tool group, select the **Motion Options** button.

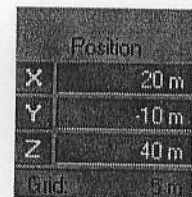
- 3) In the top area of the resulting dialog box beside the **Target Item** entry, LMB click-hold the **[none]** button to select **Dragon**.  
Close the dialog box.



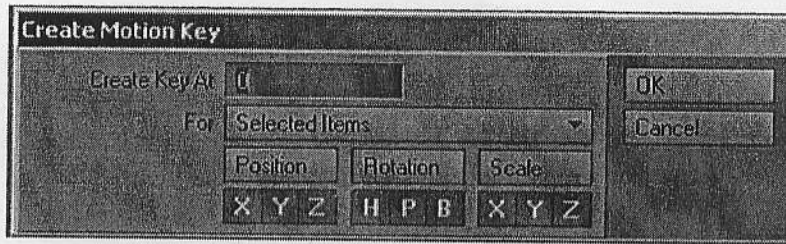
- 4) Verify that the time indicator is at frame **0**

- 5) With the camera still selected, make sure the **Items** tab is selected and select the **Move** tool in the left side menu.

- 6) In the bottom left area of the interface, type a value of **20m** for the X-axis, **-10m** for Y and **40m** for the Z-axis in the **Position** type-in.



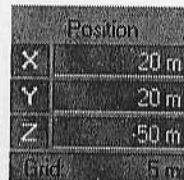
7) Press Enter on the keyboard and accept this as the position for the camera at frame 0.



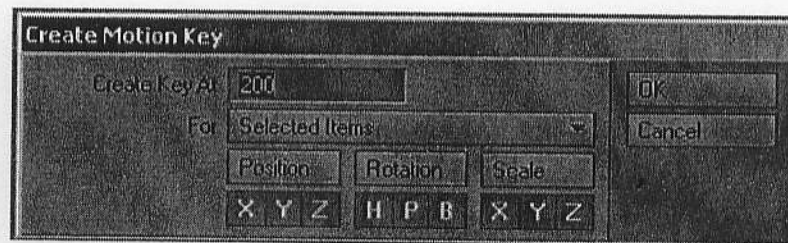
8) LMB click on the timeline to snap the time indicator to frame 200, the end of the animation.



9) In the bottom left area of the user interface, type 20 m in the X & Y entry and -50 m in the Z entry in the Position type-in.



10) Press Enter on the keyboard to create a keyframe and accept this as the position for the camera at frame 200.



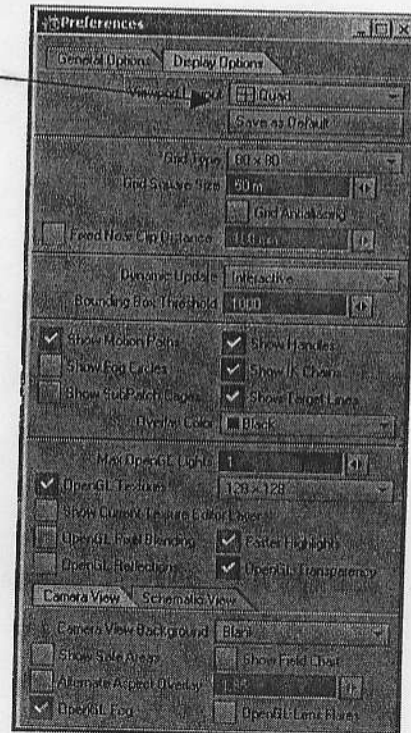
11) With the camera still selected, hit the **M** key on the keyboard to bring up the **Motion Options** dialog again. Set the **Target Item** to **none**. Close the dialog box.

12) Place your mouse over the **time indicator** and click-drag through the animation. If the dragon goes out of frame, select the **Rotate** tool (make sure you have the **Items** tab selected, under the **Tools** grouping you'll find the **Rotate** tool) Go to the frame where the dragon is most out of the **Camera View**. In the **Perspective** view, rotate your camera until the dragon is in the **Camera View**. Then press the **Enter** key on your keyboard and create a keyframe to fix the problem.

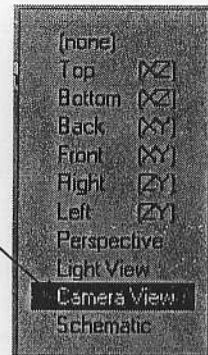
### Changing the Viewport Layout

What we are going to do now is change our viewport layout so that we can adjust the camera in the **Perspective View** while watching it in the **Camera View**.

- 1) Press the **d** key on the keyboard to bring up the **Display Options** dialog box again.
- 2) In the top area of the dialog box, beside the **Viewport Layout** area, LMB click-hold the **Single** button to select **Quad** at the bottom of the menu.
- 3) Close the dialog box.



4) Make the top right view the Camera.

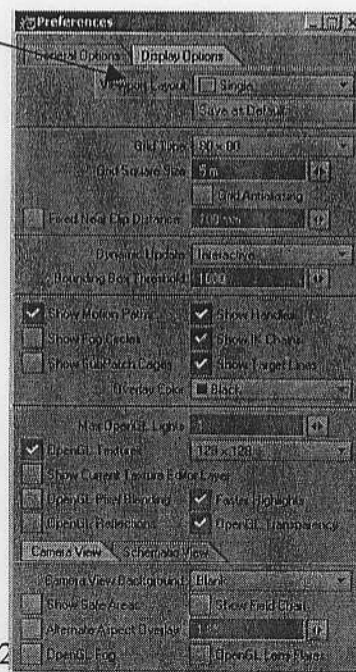


### Adjusting Cameras and Resolution

We set the target item for the camera back to none, if you scrub through the animation in the timeline you will notice at frame 100 that the dragon goes out of the **Camera View**. What we are going to do is go to the frame in question and fix it. We will also look at different camera resolutions in which we can render for the final animation.

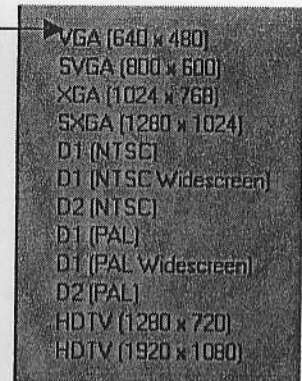
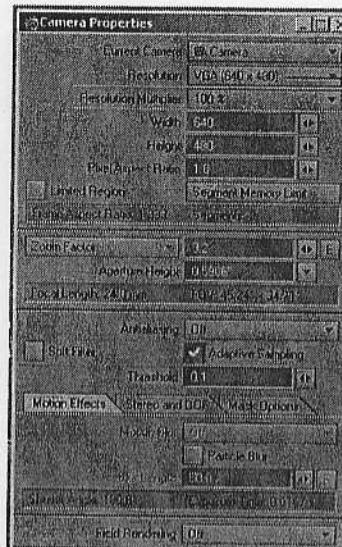
If the dragon is not in the frame, place your mouse over the green circle enclosing the camera object in the **Perspective View** and LMB click-drag down until the dragon object is in the **Camera View**. Press Enter on the keyboard to accept the camera adjustment as a keyframe.

- 1) Press the **d** key on the keyboard to bring up the **Display Options** dialog box.
- 2) Change the **Viewport Layout** back to **Single**. Close the dialog box.



3) Set your current view to the **Camera View**.

4) At the bottom area of the interface, with the camera still selected, select the **Item Properties** button. Click-hold the **VGA [640x480]** button beside the **Resolution** setting. This is where you can set different camera resolutions for the final render. Set the resolution back to **640x480** and close the Item Properties dialog box.

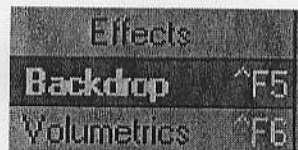


5) Press **Play** on the playback transport controls and watch the animation.

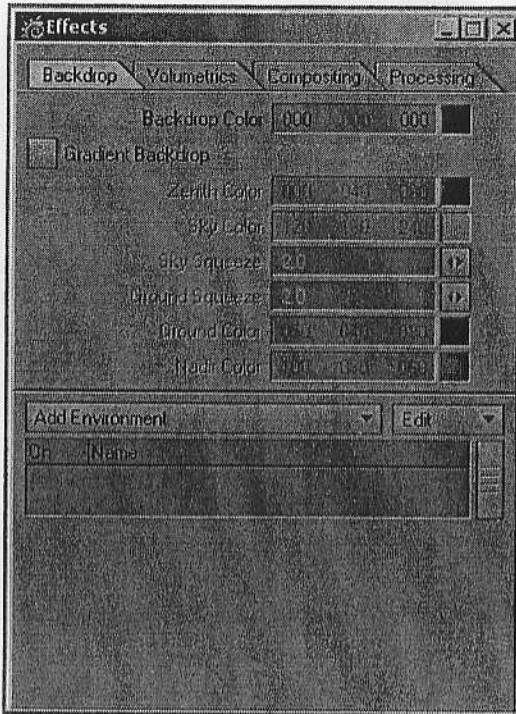
### Adding Environments

Now we will create an environment for our dragon animation.

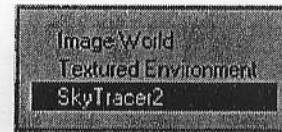
- 1) Make sure you have the **Scene** tab selected at the top area of the interface.
- 2) Select the **Backdrop** button under the **Effects** tool grouping on the left side of the interface.



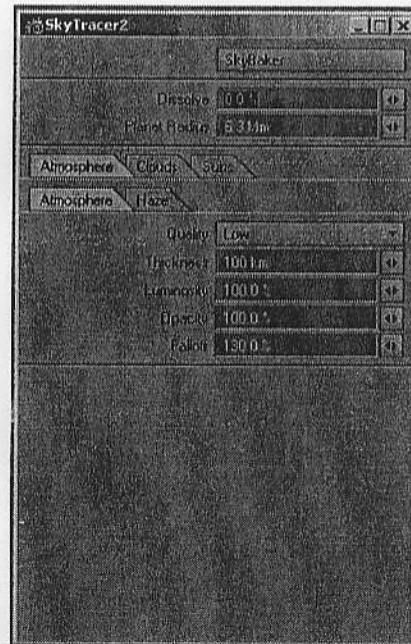
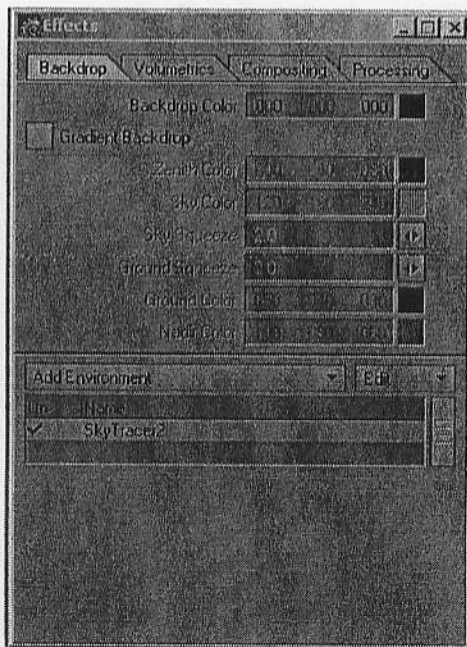
This brings up the **Effects** dialog box, which enables us to add clouds, textures, and environmental effects to our LightWave 3D environments.



3) LMB click-hold the **Add Environment** button to select the SkyTracer 2 option.

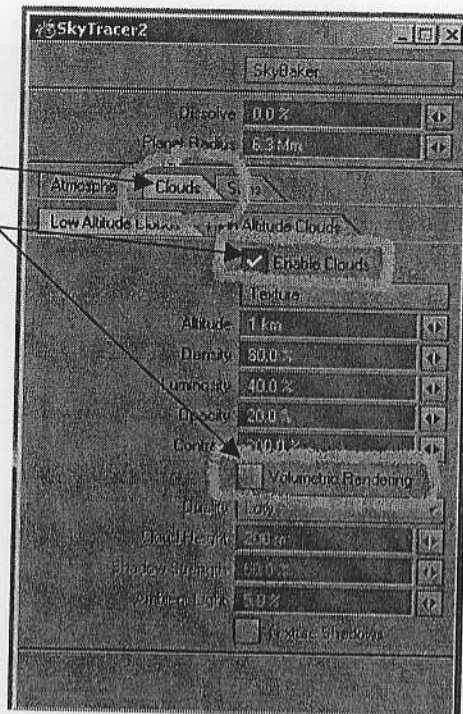


4) Double-click on the new entry reading “SkyTracer 2” under the Add Environment button to bring up the SkyTracer 2 interface.



5) Single-click on the **Clouds** tab.

6) Check the **Clouds** checkbox to enable the clouds for rendering. Uncheck the **Volumetric Rendering** button for faster rendering, realistic clouds.

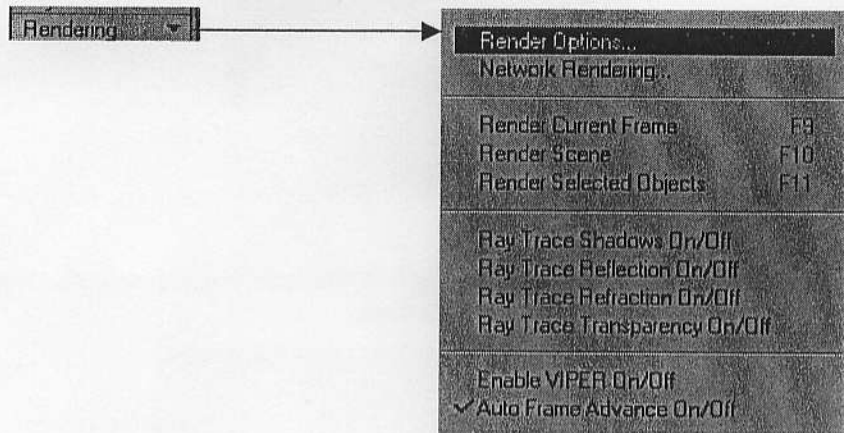




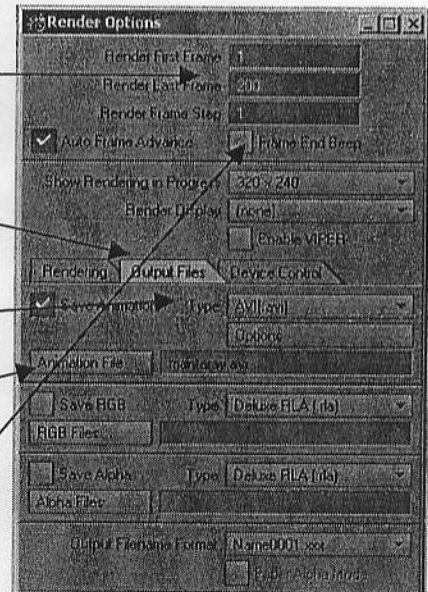
## Creating a Final Render

What we are going to do now is set what type of movie clip we will create and set how we want to render this animation.

- 1) At the top left area of the user interface, LMB click-hold the **Rendering** button to select the **Render Options** at the top of the menu.

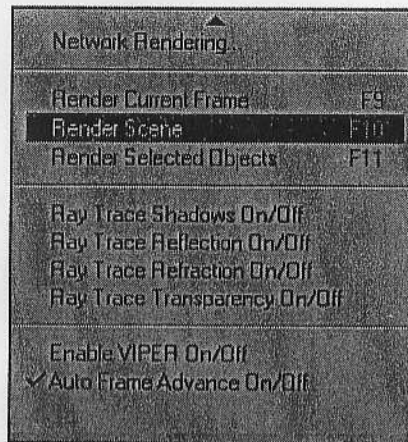


- 2) At the top of the resulting dialog box, enter a value of **200** beside the **Render Last Frame** setting.
- 3) In the middle area of the dialog box, select the **Output Files** tab.
- 4) LMB click-hold the **[none]** button beside the **Type** setting to select **AVI (.avi)** menu option.
- 5) Select the **Animation File** button and save the animation to your desktop and name it **Dragon**.
- 6) In the upper area of the **Render Options** dialog box, uncheck the **Frame End Beep** check box.

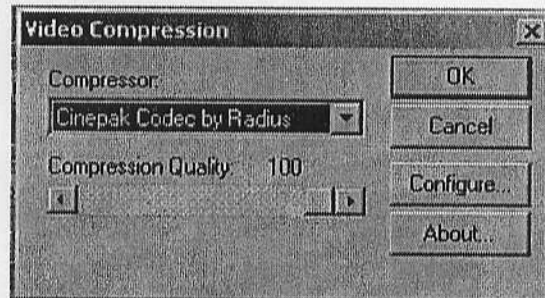


- 7) Check the following and compare your values to ours. **Close the dialog box.**

- 8) Once again, **LMB** click-hold the **Rendering** button at the top left area of the user interface to select the **Render Scene** menu option.



- 9) When the **Video Compression** dialog box prompts you to select a compression method, select **Cinepak Codec by Radius**.



Cinepak is a codek that your video card uses to compress each frame when LightWave renders the animation.

When the render finishes, go to your desktop, locate and play the Dragon avi you have created.

***This completes the tutorial.***