



SOFT F/X

3D ANIMATION STUDIO FOR WINDOWS®

*Excerpt from the
Animation Tutorial*

Byte by Byte



3D ANIMATION STUDIO FOR WINDOWS®

*Selected Chapters from the
Animation Tutorial
of SoftF/X*

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HOW TO USE THIS MANUAL

This manual assumes that you are already familiar with Windows menus and dialogs and know how to use your mouse. If you are not familiar with Windows, please refer to your Microsoft Windows User's Guide.

Execute the numbered instructions.

In italics, you'll find comments and explanations related to the instructions.

THE MOUSE

Your mouse usually has two buttons, **left** and **right**. In this manual, **left-click** means press the left mouse button until it clicks, then release it. **Left-click-and-hold** means press the left-mouse button until it clicks, and continue to hold it down. Likewise, the **right** mouse button. Sometimes you'll use both buttons simultaneously.

That's all there is to it.

The arrow used to represent the mouse's position is called a **cursor**. You can do nearly everything in SoftF/X using just your mouse.

1. Install SoftF/X by running "setup.exe". The installation process will continue automatically until completed.
2. After installation, launch SoftF/X from the Animator icon in the SoftF/X program group, or run "winani.exe" from the SoftF/X file directory. Type N, or left-click on the word **New** in the dialog (Figure 1.1).

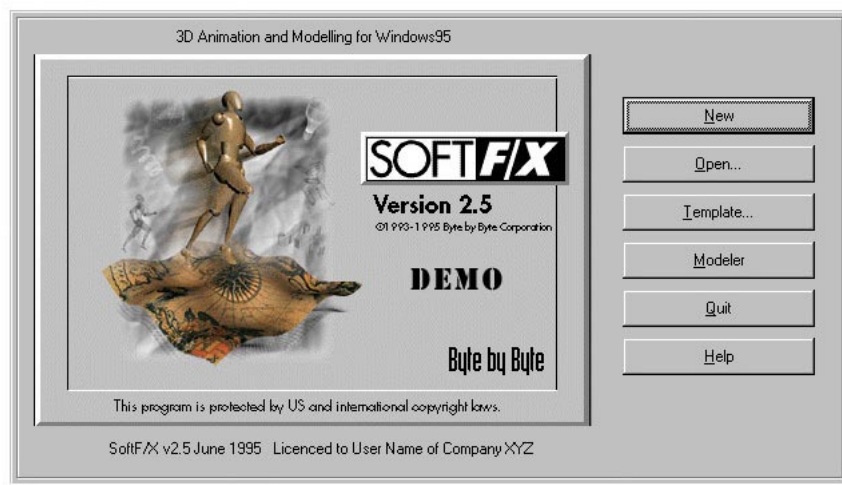


FIGURE 1.1 Startup Screen

Chapter 1: The Basics

MENUS

Most commands are organized into menus.

1. Left-click on each of the menu titles at the top of your screen.

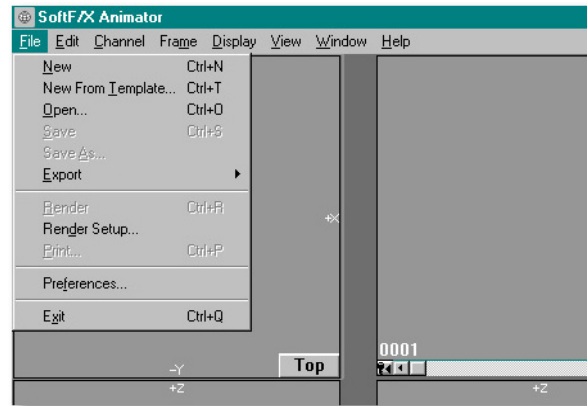


FIGURE 1.2 Menu Commands

As each title is selected, the entire menu drops down. You can see which items are available in each menu.

Items in black are “active.” If you click an active item, it will execute. Dimmed items are “inactive.” They become active under special circumstances. Clicking an inactive item does nothing.

2. Hit “ESC” several times to clear away the menus.

ICON BUTTONS

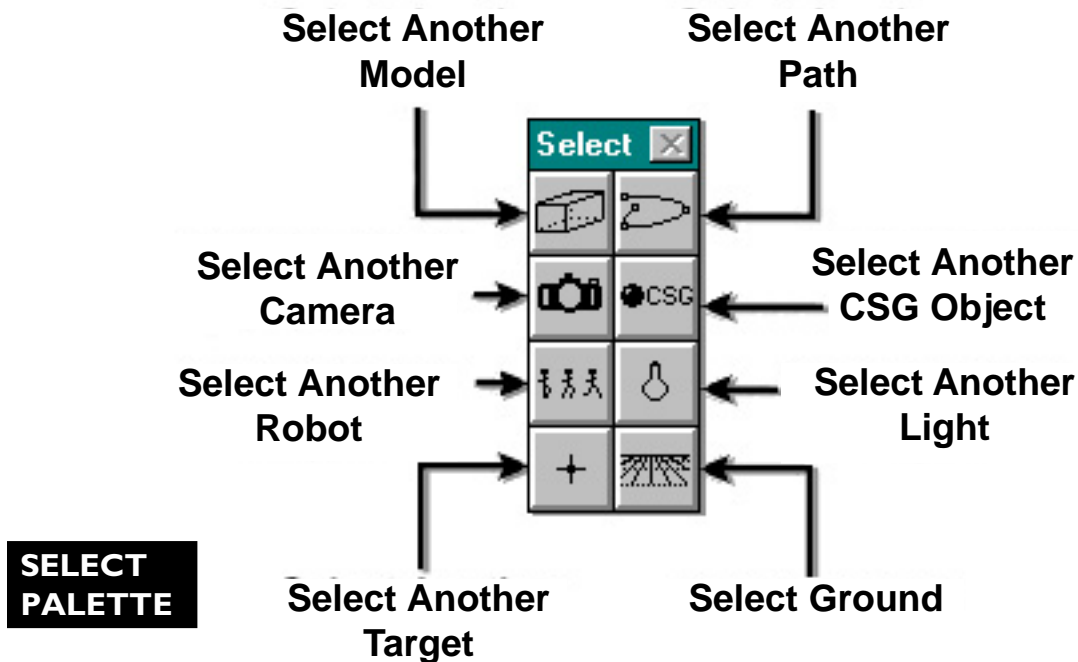
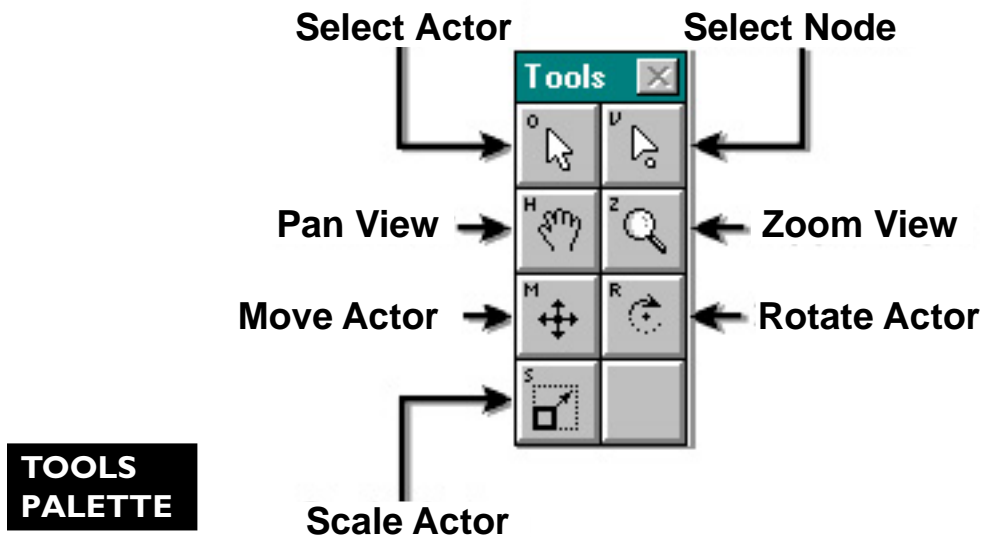
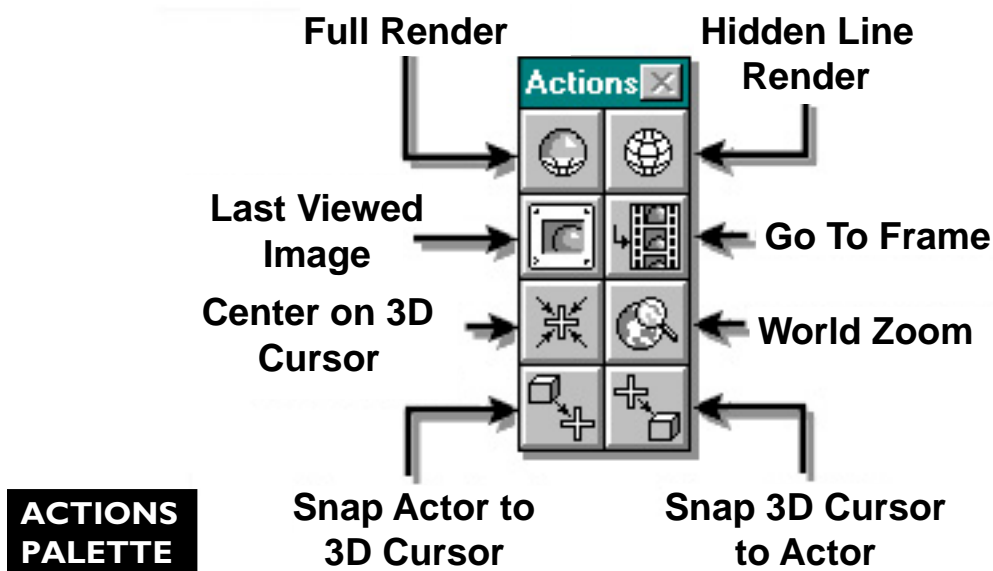
To the lower right of your screen you will see palettes of **icon buttons**. The icon buttons are grouped by function.

Left-clicking an icon button selects a tool or executes a command.

ONLINE HELP

If you place the cursor over an icon button, the right-hand side of the status line at the bottom of your screen describes the function of that button.

The Help menu - the right-most menu item - has more detailed descriptions.



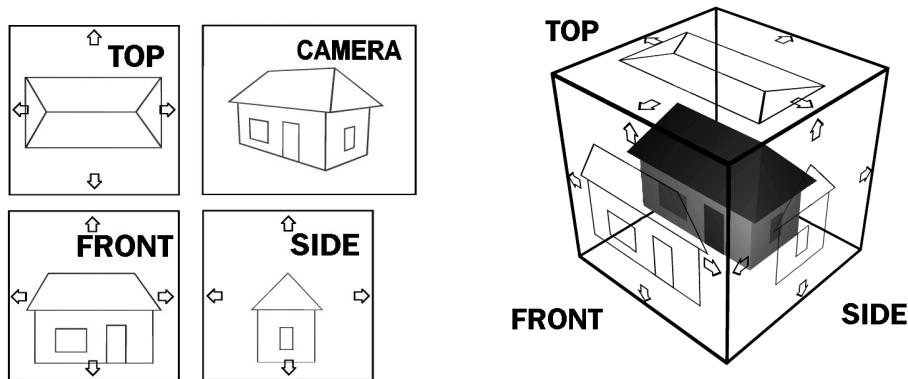
The left-hand side of the status line tells you which Actor (if any) is currently selected.

INTRODUCTION TO 3D NAVIGATION: THE WINDOW BOX

In SoftF/X, you work directly in three dimensions. You need a way to view three dimensions on your two-dimensional screen.

SoftF/X does this with a **window box**. The window box encloses the cubical space in which you work. It can be made extremely large or small. It can be positioned anywhere.

The window box views show what's inside it:



TOP: Top, looking down; FRONT: Front, looking back; SIDE: Right side, looking left

If something, or part of something, lies outside the window box, you can neither see it nor work on it. You can use this feature to isolate part of a scene, to make it easier to see and manipulate.

POSITIONING THE 3D CURSOR

1. In each of the window box views (TOP, FRONT, SIDE), notice the 3D cursor (colored crosshairs - Figure 1.6).

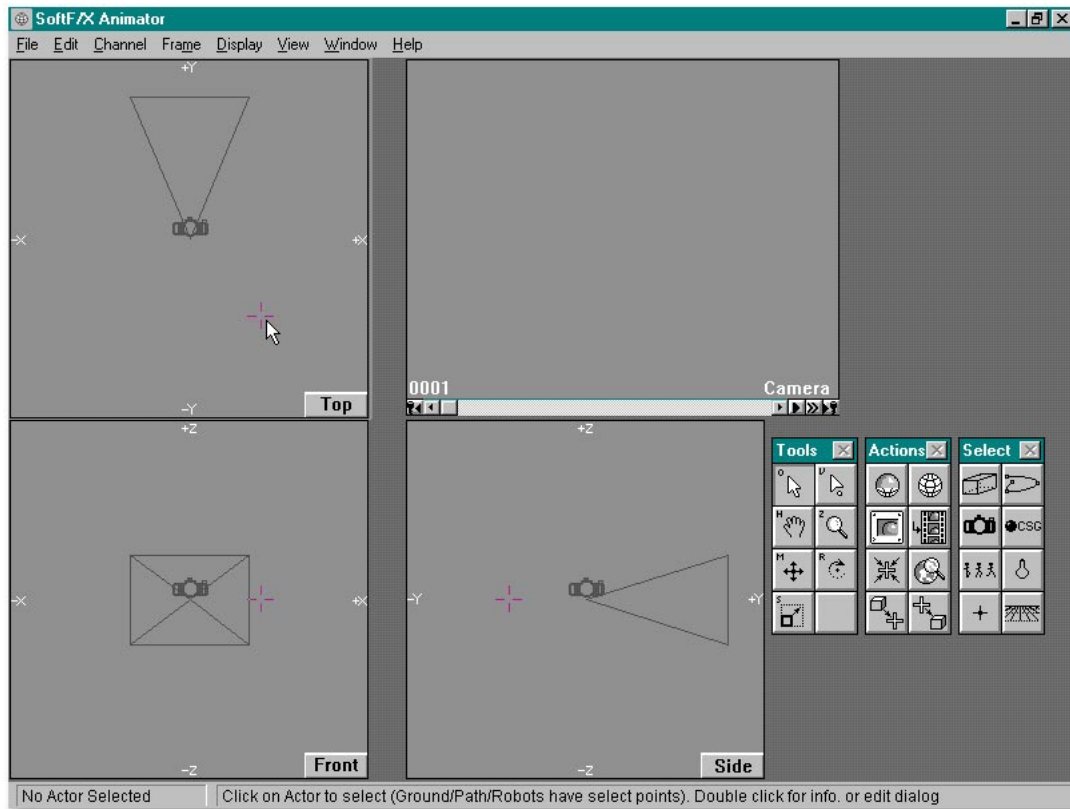


FIGURE 1.6 Arrow and 3D Cursors

The 3D cursor is always present in each window box view.

2. Put the arrow cursor in the TOP view, in the upper left corner of your display.
3. Left-click-and-hold, then drag the mouse as you continue to hold.

The 3D cursor snaps to the point of the arrow cursor as the arrow cursor vanishes. The 3D cursor now follows your mouse movements.

4. Release the left mouse button and drag the mouse.

The 3D cursor remains where you “dropped” it; the arrow cursor moves with your mouse.

5. Left-click-and-hold near the center of the TOP window, without touching the Camera

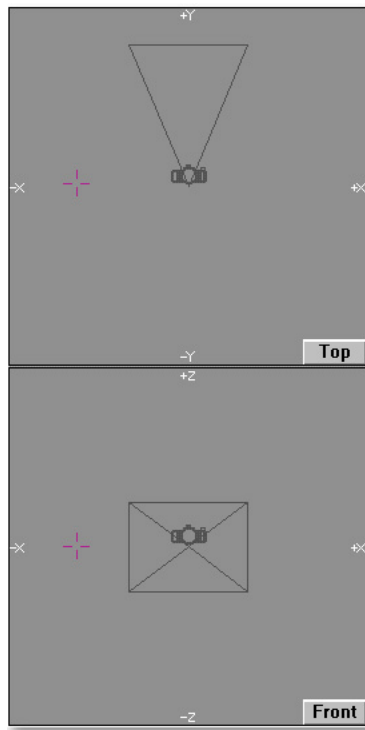


FIGURE 1.7 Top and Front View

6. Continue to hold; drag the 3D cursor between -X and +X.
7. Observe its motion in the other window box views.
In the FRONT view the 3D cursor also slides between -X and +X.
In the SIDE view, the 3D cursor doesn't move very much. Left-to-right movement in the TOP view proceeds directly away from you and directly towards you in this view.
8. Now, left-click-and-hold near the center of the SIDE window, again without touching the Camera.
9. Drag the 3D cursor between -Y and +Y.
10. Observe its movements in the other window box views.
In the TOP view, the 3D cursor also moves between -Y and +Y
By positioning the 3D cursor in any two of the window box views you can put it anywhere within the window box.

11. Press the F9 function key a few times and observe the shape of the 3D cursor (Figure 1.8).

*This is the same as the **Display-> Crosshair Cursor** menu item.*

The 3D cursor toggles between long-form (crosswires) and short-form (crosshairs). The longer crosswires are helpful for aligning things.

Experiment with cursor movement using the crosswire cursor. It sometimes makes the relationships among the window box views more obvious.

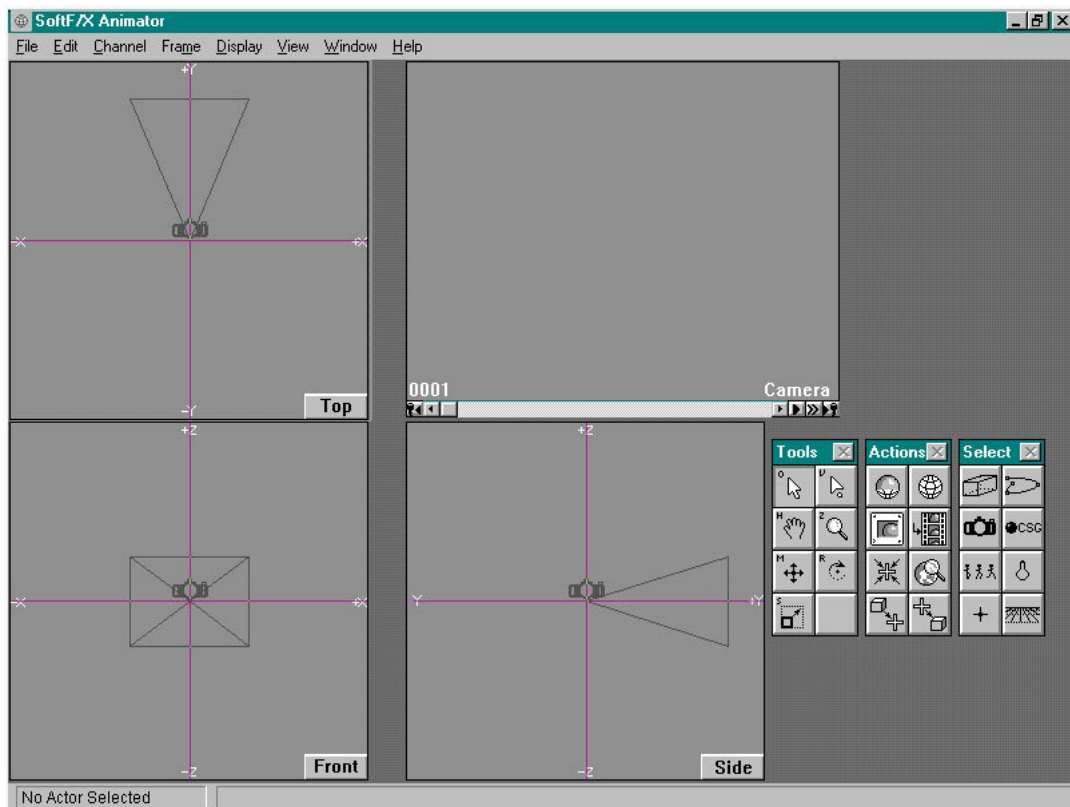


FIGURE 1.8 Crosswire Cursor

Chapter 2: The Animator

MAKE A PICTURE

1. From the SoftF/X Animator main screen, press Ctrl+O or select the Open item from the File menu.

You just ordered the program to open an existing animation (a file with an “.STG” extension). An Open Animation dialog box appears.

2. Left-click twice on ANDROID.STG.

ANDROID.STG is loaded into the Animator.

3. Examine the screen.

*This is the **Animator**, a “stage” where the elements of an animation are choreographed, cameras and lights are set up, and the ground plane, sky, and general environment are established.*

ANDROID.STG is an animation with only one frame. You’ll use it to experiment with rendering images at different resolutions and levels of quality.

4. Left-click the Render icon button at the upper left of the Actions palette.

You see the Renderer dialog (Figure 2.1).



Render Icon

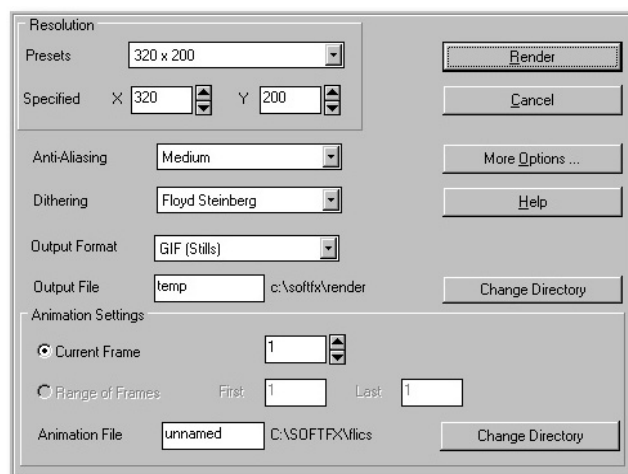


FIGURE 2.1 Render Dialog

5. Left-click in the drop-down list box just under and to the right of the word **Resolution** (where it says “320 x 200”).

*These are the preset rendering resolution settings available. You can also type in your own custom settings in the **Specified** boxes.*

6. Click on **320 x 200** preset to select that resolution. Click on the Output Format box and then on TGA 32 bit.

320 x 200 pixel resolution is the highest resolution supported by the demo. SoftF/X can actually render to 5,000 x 5,000 pixels.

7. At the top right of the dialog is a button labeled **Render**. Left-click it.

The rendering cycle begins.

The Render Status dialog displays two separate progress bars, one for the current frame being rendered and the second for the animation as a whole.

The first line of text under the progress bars tells you exactly which part of the rendering process is working at the moment.

The second line of text will give you the rendering time of the last completed frame. This line will be marked NA (Not Available) while the first frame is being rendered.

If you are rendering an animation, the last line will show an estimated time and date for the animation to finish, based on the time to render the last frame and the number of frames left.

The faster your machine, the less time it takes to render. On a 66 MHz 486DX2, a single frame like this takes about five seconds. On a 386SX, it can take half a minute or more.

The Viewer program automatically displays your picture when the rendering is finished.

8. To close the Viewer, double-click on the Control Menu box in the upper left corner of the Viewer window. To close the Render, click on “cancel” in the Render status dialog.

You can view the picture again (until you render another one over it) by left-clicking on the Viewer icon button.



Viewer Icon

9. Left-click the Render icon button again.

Now you'll experiment with different settings in the Render Options dialog.



Render Icon

10. Left-click in the box beside **Dithering**, in the middle left of the dialog. Floyd-Steinberg is the default item for this drop-down list.

Dithering means mixing up the colors in a picture just enough to hide a problem called color banding or false contours. SoftF/X has two ways to do this, Floyd-Steinberg and Noise.

11. Select **None**, and left-click **Render** again to create the picture.

You'll render the same picture, but this time with Floyd-Steinberg dithering turned off. The Viewer program automatically displays your picture when the rendering is finished.

12. Look closely at the lower right corner of the screen.

You can see faint semicircular bands of shading in the color of the ground. This is a result of the color limitation in the display format you are using. When only a few colors are available, there is a marked border where they change. There are several ways to make this border less noticeable.

13. Close the Viewer and the Render status dialog. Select the **Render** icon again. In the Render dialog, choose **Noise** dithering.



Render Icon

14. Click on the button labeled **More Options** at the middle right of the dialog.

*A dialog labeled **Render Options** appears. This dialog contains settings you will use less frequently. These settings can be left at the default values for most renderings.*

15. Set the **Noise Value** to 12, and Close the Render Options dialog.

16. Left-click **Render** to create the picture.

The Viewer program automatically displays your picture when the rendering is finished.

17. Look closely at the lower right corner of the screen.

You can see where the faint semicircular bands of shading are less noticeable than with no dithering. The Noise dithering pattern is like static, a more random pattern than the Floyd-Steinberg pattern.

18. Close the Viewer and the **Render** status dialog. Select the Render icon again. In the Render dialog, choose **Floyd-Steinberg** dithering.



Render Icon

19. Left-click **Render** to create the picture.

The Viewer program automatically displays your picture when the rendering is finished.

20. Look closely at the lower right corner of the screen.

You can see where the faint semicircular bands of shading are less noticeable than with no dithering. The Floyd-Steinberg pattern is a more regular, smoother dithering pattern that works better with FLI and FLC animations. The Noise pattern tends to make animation files larger and slower to play back.

21. Close the Viewer and the Render status dialog.

There are other ways to smooth out pictures. The Anti-Aliasing items get rid of the stair-stepped border, called aliasing, you see around the edges of objects. However, the

better the anti-aliasing, the slower your rendering. You need to decide how much anti-aliasing you can trade for faster rendering times.

LOAD ANOTHER ANIMATION

1. Press CTRL+O or select the Open item from the File menu.

You just ordered the program to open an existing animation (a file with an “.STG” extension). A File Open dialog box appears.

2. Left-click twice on SNAPROLL.STG.

SNAPROLL.STG is loaded into the Animator, and you see the new screen.

3. SNAPROLL.STG is a fully prepared animation. To see a Quick Draw rendering, click on the “filled arrow” button (lower right-hand corner of Camera window).
4. To pause the quick draw animation, click on the stop button in the Animate dialog box.

The single arrow button will single step the animation, the filled arrow will restart the quick draw animation, and double arrow will give “bounding box” animation.

SELECTING ACTORS

You can select Actors in an animation three different ways:

- Click directly on an Actor in the Top, Front or Side view.
- Use the **Edit-> Select** menu item to select from a list of Actors by name.
- Click on “Show Selectors” in the Windows menu dialog to make the separate Select buttons palette appear, and use those Actor selection tools.

SELECTING ACTORS DIRECTLY

1. With the SNAPROLL.STG loaded, click on any of the **nodes** of the Path in the Side view (Figure 2.3).

*A **node** is a small box marking one of the handles used to change a Path’s shape.*

The Path is highlighted, showing that it is selected. The name of the Path will appear in the left-hand side of the status bar at the bottom of the screen.

This path is the route the Triplane takes. A Path is an Actor, just as the Triplane is. Path, Robot and Ground Actors can only be selected by clicking on one of their nodes. All other Actors are selected by clicking on any part of the Actor’s outline.

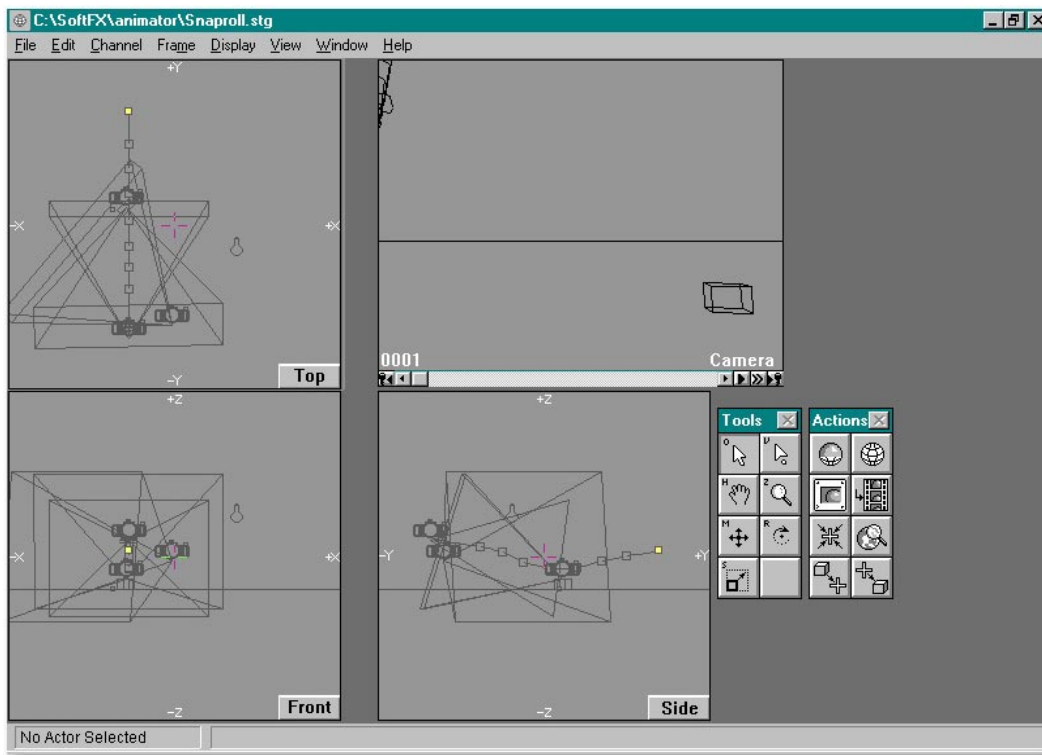


FIGURE 2.3 SNAPROLL.STG loaded into Animator

2. Click on one of the **Cameras**.

The name of the Camera will appear in the status bar at the bottom of the screen. SNAPROLL.STG contains three Cameras.

3. Click on each of the other Cameras.

Each camera highlights in turn. The name of each camera appears in the status bar.

4. Notice the FOV (Field of View) indicators extending from each Camera.

The FOV cones indicate the direction and viewing angle of each Camera. They can be very helpful when putting a shot together, but sometimes they clutter the scene, and you may need to suppress them.

5. Pull down the **Display** menu.

*The menu item **Camera field of view** has a check-mark beside it, which tells you that this item is turned ON.*

6. Select the **Camera field of view** item to turn it off. Select again to turn it back on.

Notice that the FOV cones are replaced with simple arrows extending from each Camera (Figure 2.5).

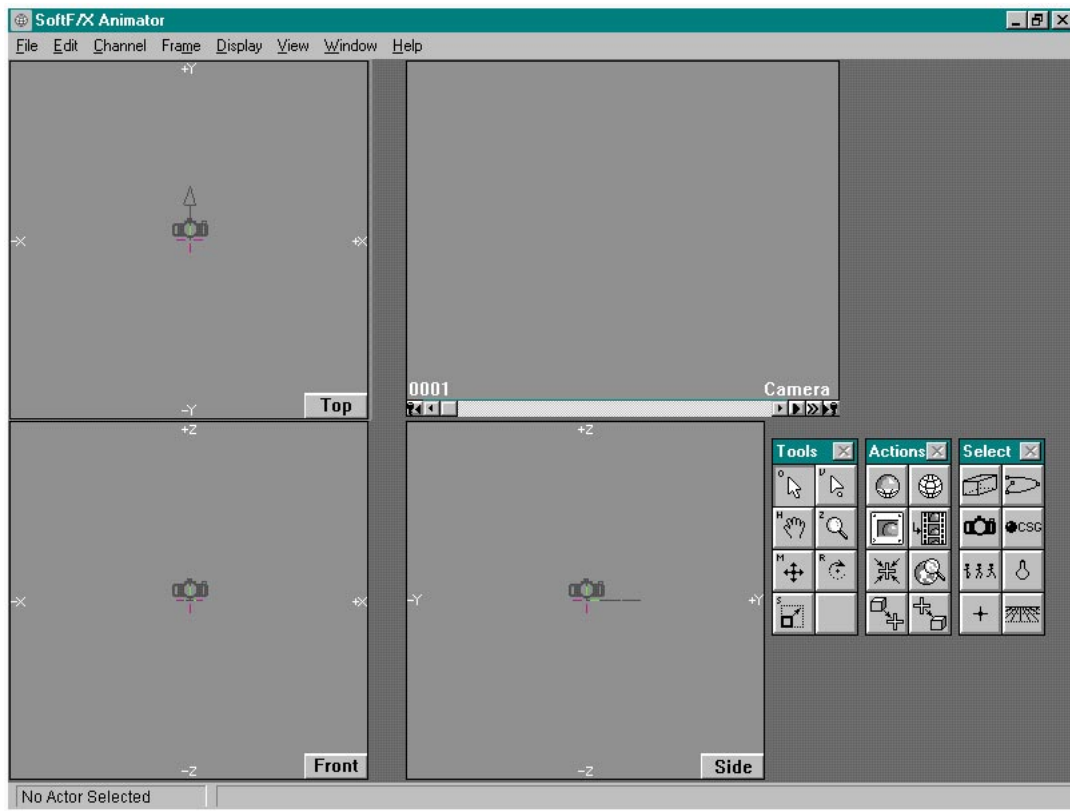


FIGURE 2.5 The Camera Field of View is OFF

7. Click on the **Light** Actor.

The Light in the scene is highlighted, and the name Light appears in the status bar.

SELECTING ACTORS BY NAME

1. Pull down the **Edit** menu.
2. Choose the **Select** item.

The Choose Actor dialog will appear (Figure 2.6).

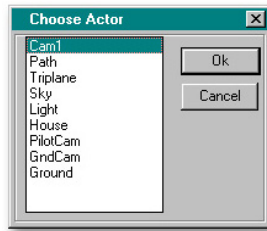


FIGURE 2.6 Choose Actor Dialog

3. Choose **Cam1** from the list of Actors.

The name of the Camera will appear in the status bar at the bottom of the screen.

4. You can call up the Select Actor dialog again by typing ALT+E, L. Choose **Triplane** from the list of Actors.

SELECTING ACTORS USING THE SELECT PALETTE TOOLS

1. Use the **File->Preferences** menu item to display the **Animator Startup Preferences** dialog.

2. Turn on the check box labeled **Show Select Panels**. Click OK.

This changed Preference attribute will not itself take effect until the Animator is re-started.

3. Use the **Window -> Show Selectors** menu item to toggle the Select Panel immediately (Figure 2.7).

4. Locate the Selection palette, at the lower right of your screen.



Path Icon



Model Icon

FIGURE 2.7 The Select Palette

5. Left-click the **Path** button.

The Path is highlighted, showing that it is selected. Path selected will appear in the left-hand side of the status bar at the bottom of the screen.

6. Left-click the **Model** icon button several times as you observe each window box view. Observe the name of each selected Actor as it appears in the status bar.

[Triplane] alternates with [House] in the status bar (Figure 2.8 and Figure 2.9).

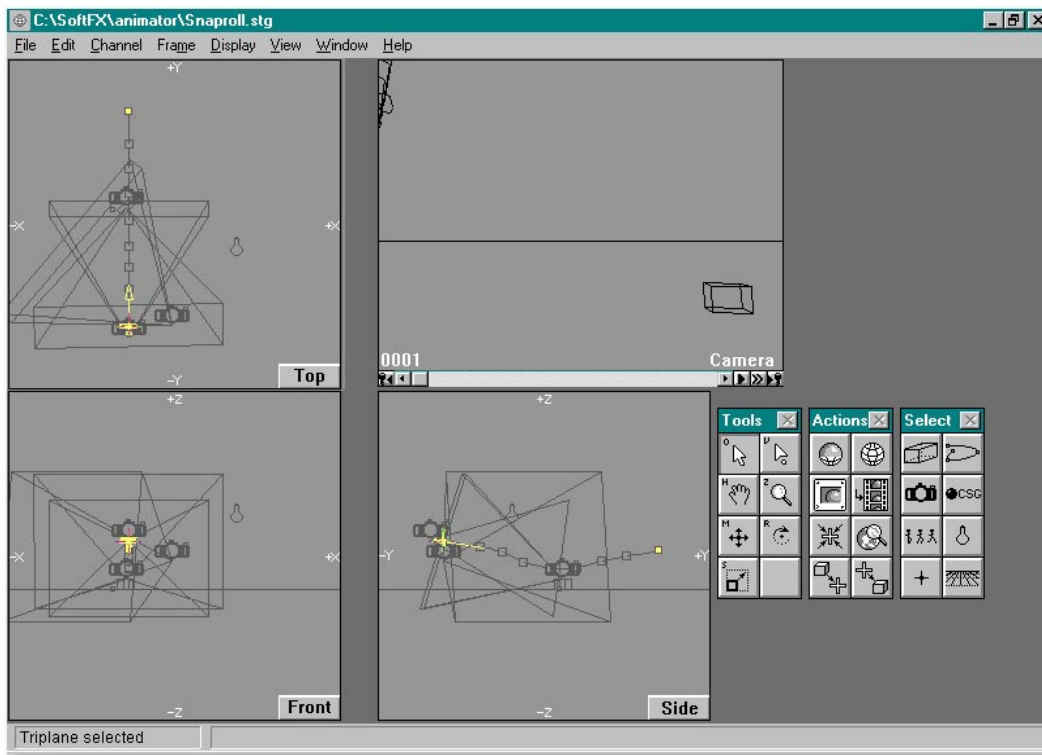


FIGURE 2.8 The Triplane is selected

The House and the Triplane alternately highlight in the window box views. Both models appear quite small because the views are zoomed-out to take in the whole scene at once.

7. Left-click the **Camera** icon button a few times as you observe the window box views.

8. Notice the FOV (Field of View) indicators extending from each Camera.

The FOV cones indicate the direction and viewing angle of each Camera.

9. Left-click the **Light** icon button.

The Light in the scene is highlighted, and Light selected appears in the status bar.



Camera Icon



Light Icon

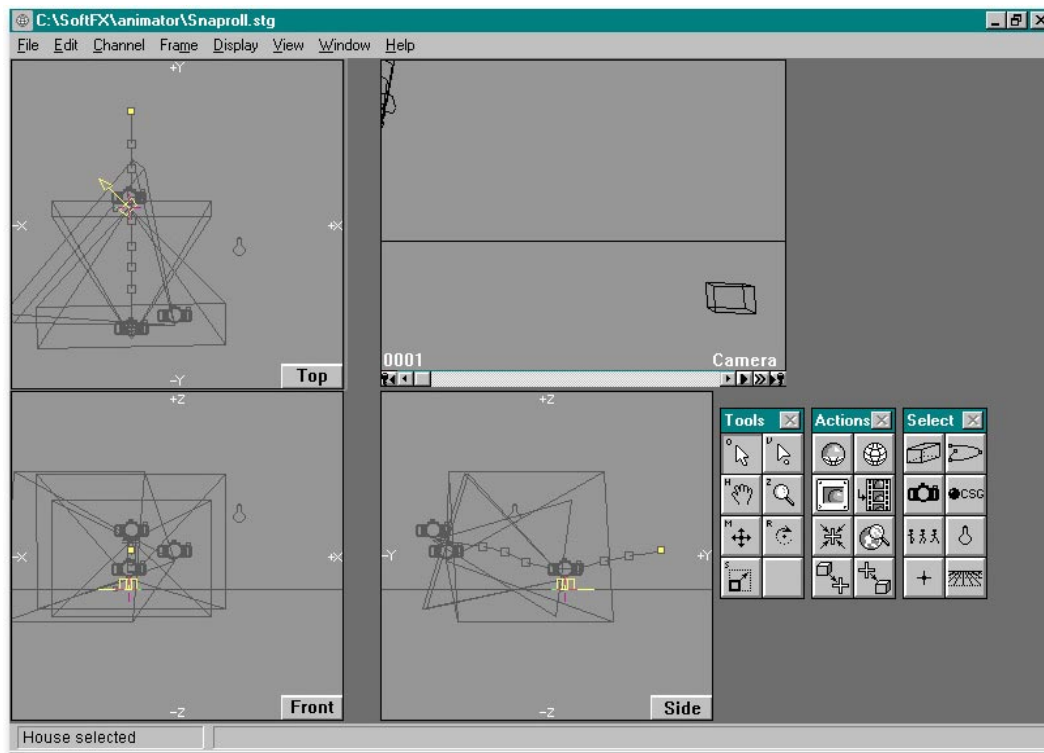


FIGURE 2.9 The House is Selected

IF THE HOUSE SEEMS TO DISAPPEAR

There is a Global Quickdraw toggle (**Display-> Global Quickdraw** menu item) that causes only model vertices to be displayed. Since the house has only a few vertices, it appears only as a few dots when Global Quickdraw is toggled on.

Press F5 to toggle Global Quickdraw, then click on the open arrow at the bottom of the camera view to force a screen refresh.

Chapter 3: Preview and Navigation Tools

PANNING

1. Select the **Pan** icon from the Tools palette.
2. Left-click-and-drag the image from left to right in the Front view.

The elements inside the window box will appear to move along with the Pan tool. Actually, they remain stationary - only the window box moves (Figure 3.1).



Pan Icon

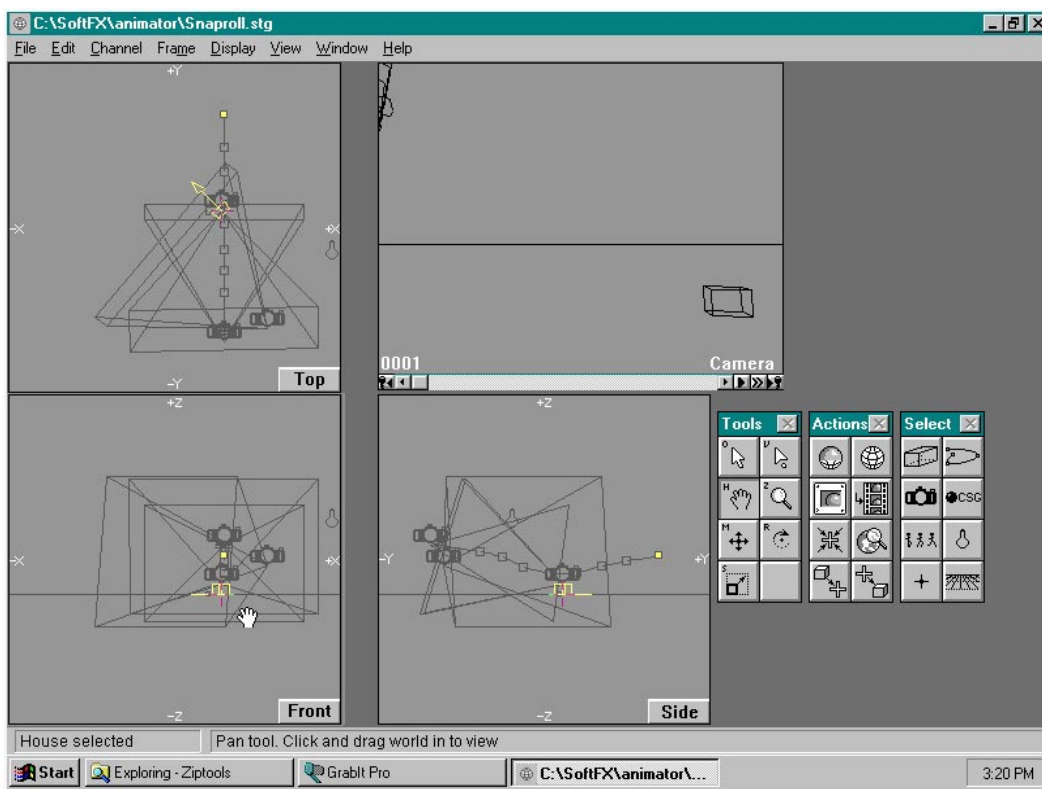


FIGURE 3.1 Using the Pan tool

3. You can also select the Pan tool at any time by holding down the Spacebar. Releasing the Spacebar returns the cursor to the last tool you selected.

If you move the window box so that an Actor vanishes (moves outside the window box), the Actor disappears from all the window box views.

As you use the Pan tool, the Camera view remains unchanged. That's because only the window box moves. The camera and the other Actors remain stationary. Only your window perspectives are moving.

4. Use the Pan tool to re-center the image.

ZOOMING

1. With the SNAPROLL.STG animation loaded, click on the World Zoom button in the Actions Tools Palette. Then use the select model button in the Select Tools palette to select the Triplane. Select the **Zoom** tool from the Tools palette.

2. Click on the House in the Top view with the Zoom tool.

The window box shrinks around its center, so the objects inside seem larger. (The objects actually remain the same size.) If the plane seems to disappear on a zoom-in, click on the Snap-to Actor button in the Actions tool palette.

3. Zoom in, until the Triplane occupies most of the window box (Figure 3.2).



Pan Icon



Zoom Tool

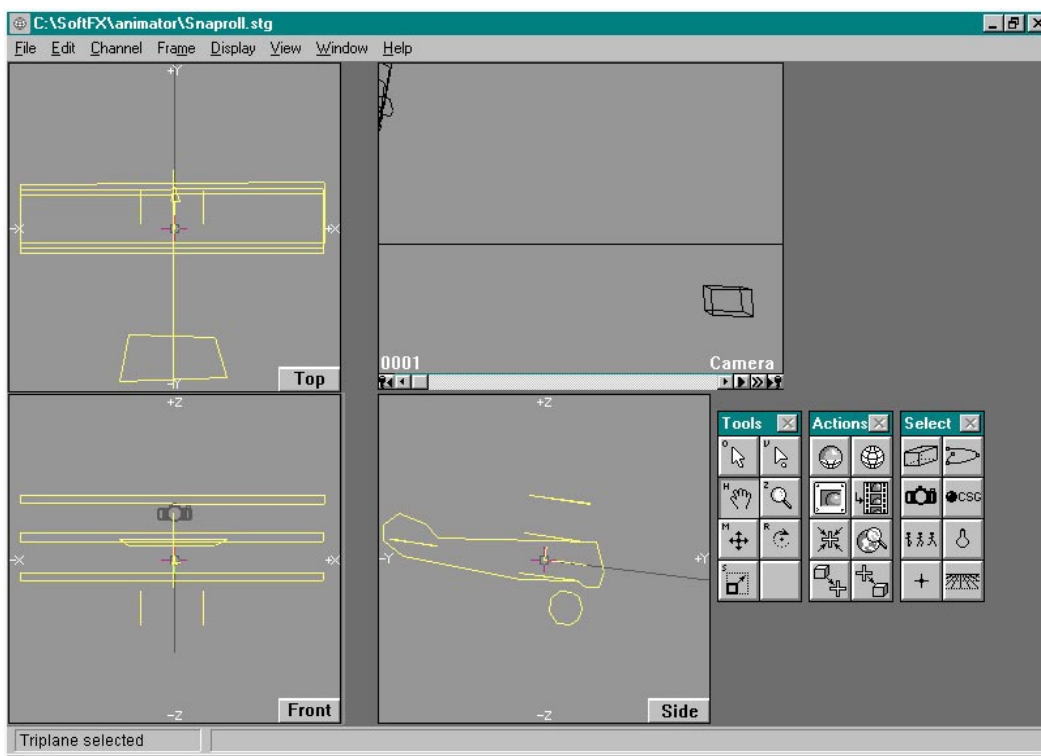


FIGURE 3.2 The window box is zoomed in on the Triplane

4. Hold down the Alt key.

Note the change in the Zoom cursor icon, from plus to a minus symbol inside the lens of the magnifier. The Alt key changes the Zoom In tool to a Zoom Out tool.

- Continuing to hold down the Alt key, click anywhere in the Front, Top or Side views with the Zoom tool.

The window box grows around the cursor position, so the objects inside seem smaller. (The objects actually remain the same size.)

- You can select the Zoom-in tool at any time by holding down the SPACEBAR and CTRL Keys. Releasing both keys returns the cursor to the last tool you selected.
- You can also Zoom In by pressing the + key. Pressing the - key will Zoom Out.

FULL WORLD VIEW

- If you get lost or need to bring everything into view at once, left-click the World Zoom button (Figure 3.3).

The window box will automatically re-size and reorient itself, so all the Actors fit inside.



World Zoom

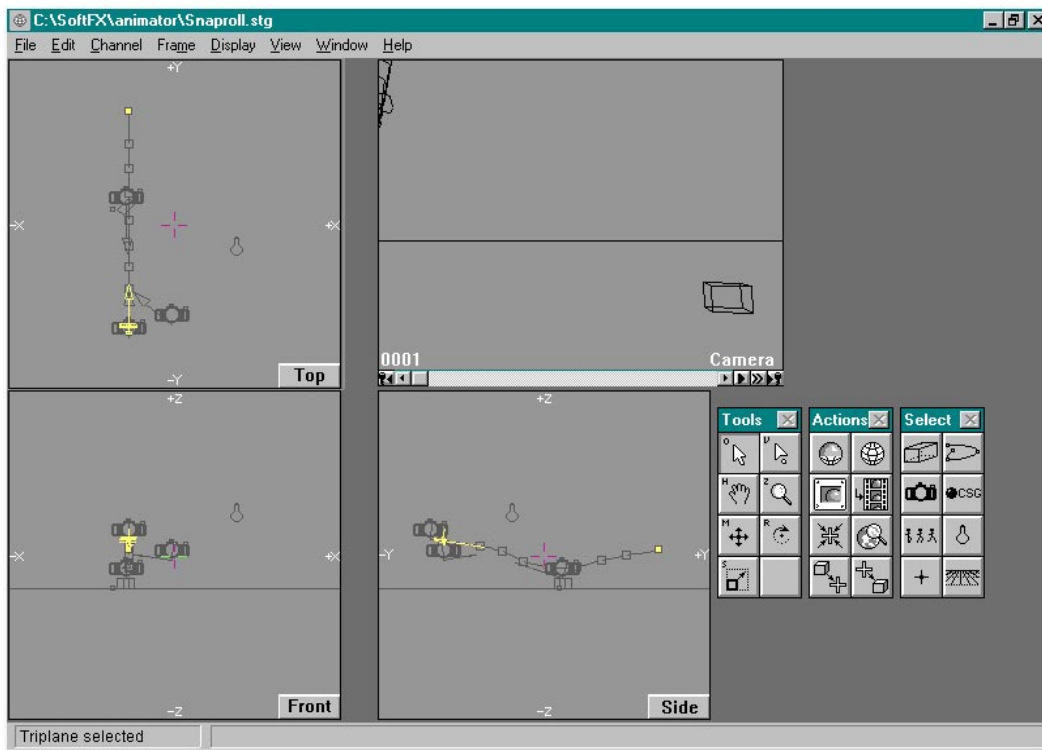


FIGURE 3.3 Full World View has been executed. All the Actors are visible.

SNAP THE CURSOR TO AN ACTOR

Frequently, you'll need to position the 3D cursor directly on an Actor. You can do this manually, dragging the 3D cursor to the Actor, making sure it's positioned correctly in two window box views.

You can accomplish the same thing instantly with the Snap Cursor to Actor button.

1. With the SNAPROLL.STG animation loaded, click on the World Zoom button in the Actions Tools Palette. Then use the select model button in the Select Tools palette to select the Triplane. To position the 3D cursor on the Triplane, select the Triplane first. Make sure the name Triplane appears in the left side of the bottom status bar.

The Triplane will be highlighted in the window box views, but it will be small (because you are zoomed out quite a bit, in order to see the entire scene) (Figure 3.4).

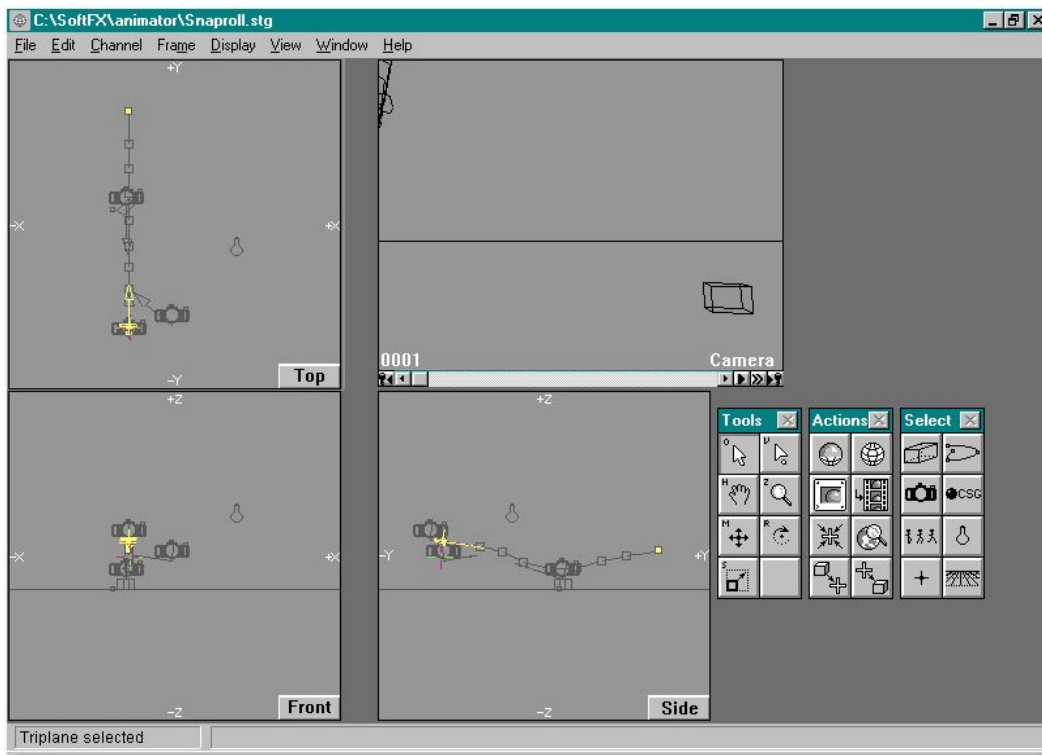


FIGURE 3.4 Before Recenter in on Triplane

2. Left-click the **Snap 3D Cursor to Selected Actor** icon button.

The 3D cursor snaps to the Triplane.



Snap to Cursor

RECENTER THE WINDOW BOX

1. Left-click the **Re-center on Cursor** icon button.

The window box centers itself on the Triplane (Figure 3.5).



Snap to Cursor

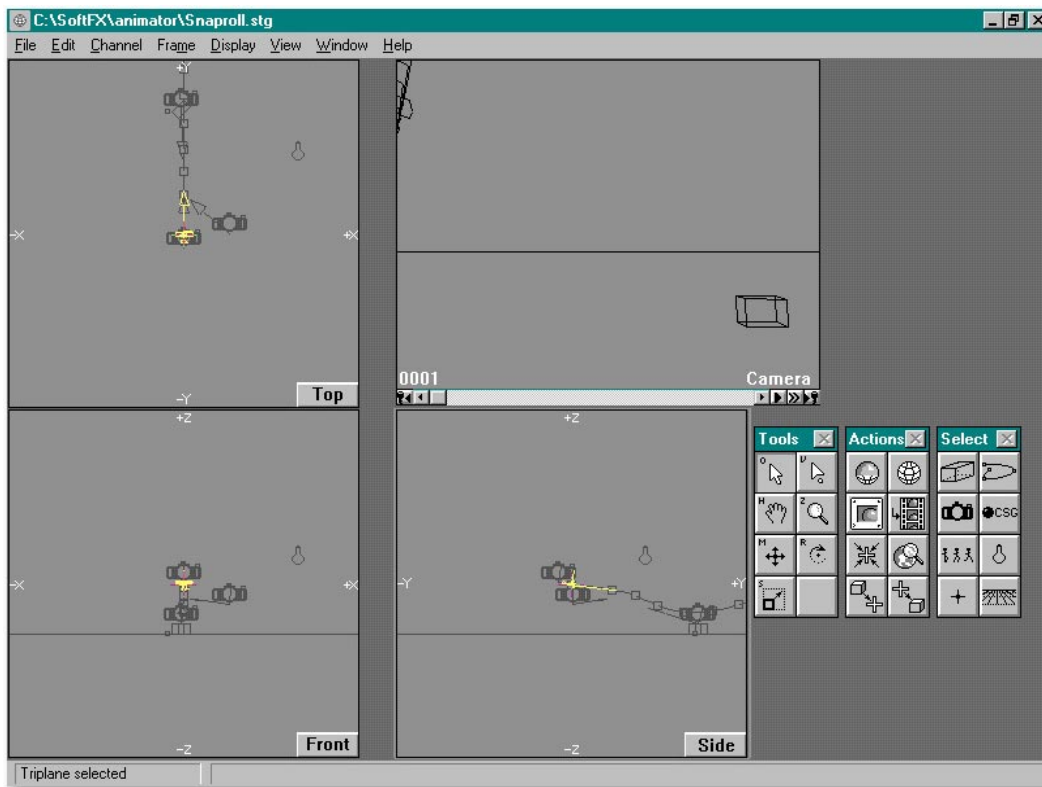


FIGURE 3.5 Recenter has been executed with the cursor zeroed on the Triplane

DRAW FULL WIREFRAME / DRAW WITH BOUNDING BOX

1. Unless you've already done so, recenter the window box on the Triplane and zoom in until it fills a good portion of the window box again (Figure 3.5).
2. From the **Display** menu, select the **Draw Full** item.

You see a full-wireframe rendering of the Triplane in each window box view (Figure 3.6). Draw Full and Draw Bounded toggle back and forth. If you are in Draw Bounded



World Zoom

mode, then **Display** -> **Draw Full** menu item is visible, and vice versa.

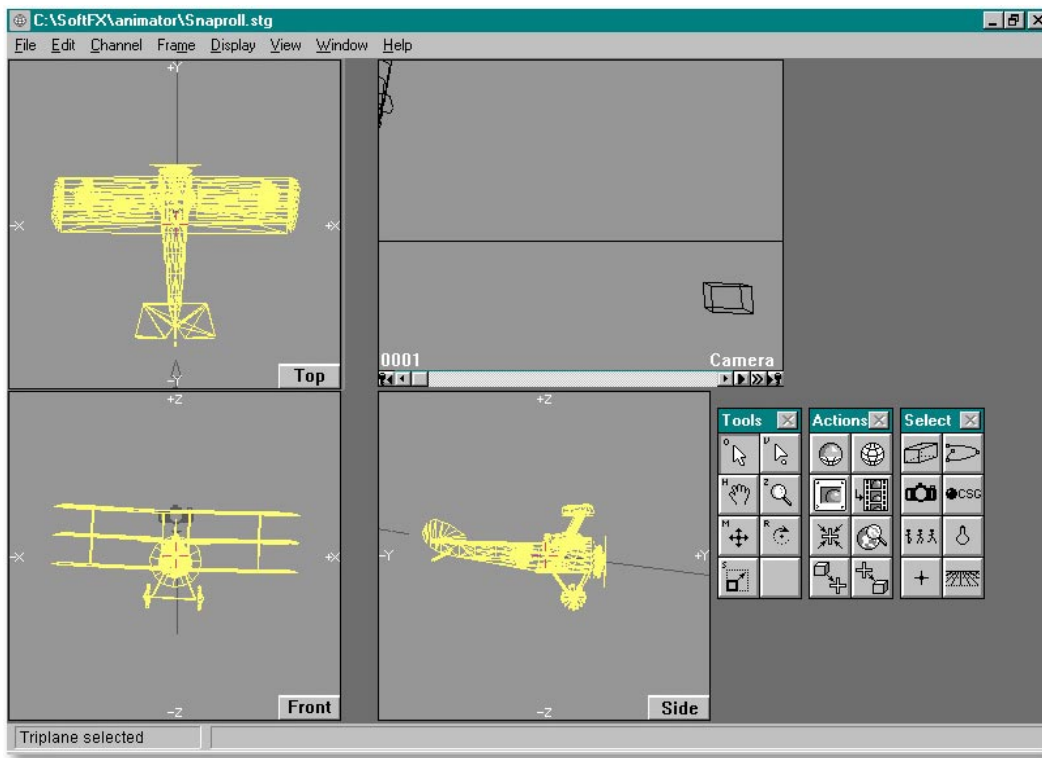


FIGURE 3.6 Triplane in Full Wireframe mode

3. From the **Display** menu, select the **Draw Bounded** item.

You return to the “bounding-box” mode. This displays either a simple box containing the Actor’s physical extents, or a “custom” bounding box you can make in the modeler.

4. You can also toggle between Draw Bounded and Draw Full modes by pressing the F6 key.

5. Select **Draw Full**.

6. Examine the Triplane in detail. For example, zoom in and view the left wheel, then the rudder.

Use the Pan and Zoom tools to work your way around the Model. (Remember: you may need to use the tools in two views to get it exactly where you want it.)

7. The screen will redraw much faster in Bounded mode. You may want to change between Bounded and Full modes as you move around the model, in order to maneu-

ver more quickly.

When you're done examining the Triplane, left-click the **Full-World View** button to get the whole picture again (Figure 3.7).

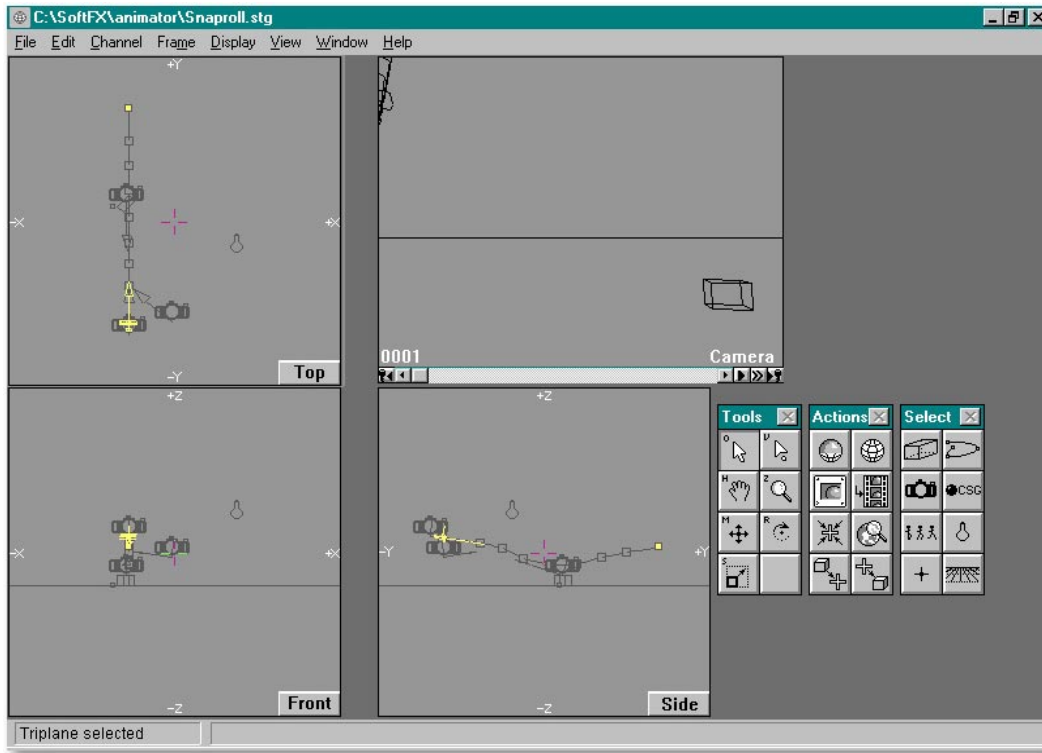


FIGURE 3.7 The Animator, after Full-World View is executed

PLAY BOUNDED

1. To get a fast preview of the whole movie, starting at frame 1, click the Play Bounded button (Figure 3.8).

The animation renders in its fastest, most abbreviated mode, starting at frame 1, using a “bounding box” representation of the Triplane.

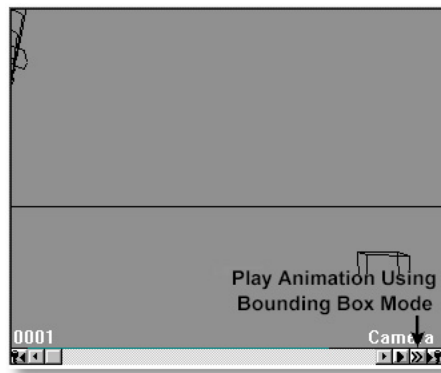


FIGURE 3.8 Play 3D/Play Bounded buttons

2. Watch the Frame Counter as the animation plays.
3. Click on the **Cancel** button in the Animate window to stop the animation and return to the frame from which you started.
4. Again, left-click the Play Bounded icon button.
5. Clicking on the **Stop** button in the Animate window will halt the animation at the frame currently being displayed. Try stopping and re-starting the animation at different spots.

PLAY 3D

1. To see a full wireframe rendering of the animation, left-click the **Play 3D** - filled arrow - button (Figure 3.9 next page).

A full wireframe animation plays, beginning at the frame from which you issued the command. It renders more slowly than the bounding box version you saw before.

2. Click on the **Cancel** button to stop the animation and return to the frame from which you started.
3. Again, left-click the Play 3D button.
4. Clicking on the **Stop** button will halt the animation at the frame currently being displayed. Try stopping and re-starting the animation at different spots.
5. Click the Play 3D button to restart the animation; click Stop to halt at that frame; click the Play 3D button to start again; Stop to halt, etc.

This way you can move through the animation a bit at a time, stopping where you want to check positions, and so forth.

GO TO A SPECIFIC FRAME

1. Press CTRL+F, or select the **Frame-> Go to...** menu item.

The Go to Frame dialog appears.

2. Enter the number 5. Click **OK**.

The Animator moves to frame 5, as you specified. SNAPROLL.STG has 70 frames; if you enter a larger number, the Animator will move to the last frame.

This is the easiest way to navigate precisely to a particular frame in a large animation, when the frame scroll bar cannot give enough accuracy.

WIREFRAME / HIDDEN-LINE CAMERA VIEW

1. Left-click anywhere in the CAMERA view window. The CAMERA view is rendered in full wireframe mode (Figure 3.9).

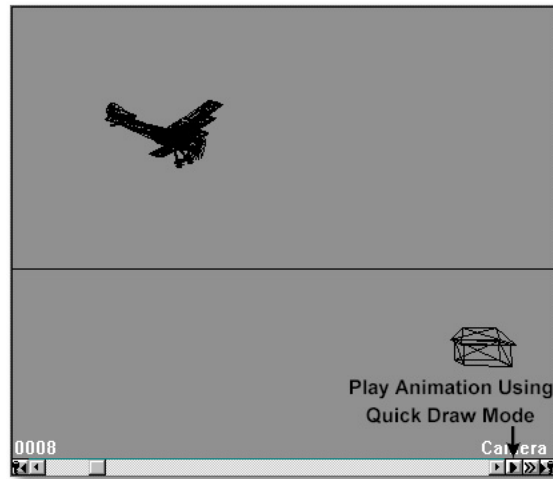


FIGURE 3.9 House & Triplane rendered in full wireframe at frame 5

2. Left-click the Draw Hidden Line button in the Actions palette.

The CAMERA view is rendered in hidden-line mode (Figure 3.10).



Draw Hidden

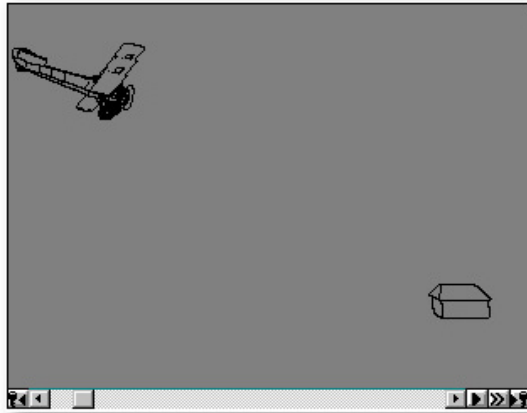


FIGURE 3.10 *House & Triplane rendered in hidden-line at frame*

3. Left-click in the CAMERA view once more.

The view returns to full wireframe.

STEP THROUGH THE ANIMATION

1. To step through the animation one frame at a time, click the right-hand Scroll Arrow as you observe the frame counter.
2. To back up one frame at a time, click the left-hand Scroll Arrow.
3. To go to the end or beginning of the animation, hold down the CTRL Key while clicking on a Scroll Arrow.

EXPANDING WINDOWS TO FULL SCREEN

1. Left-click on one of the view buttons labeled TOP, FRONT or SIDE, in the lower right corner of each window box view.

You see an expanded, full-screen version of that view (Figure 3.11). At the bottom of the expanded view, you'll notice the view buttons. The far right view button indicates the name of the current view.

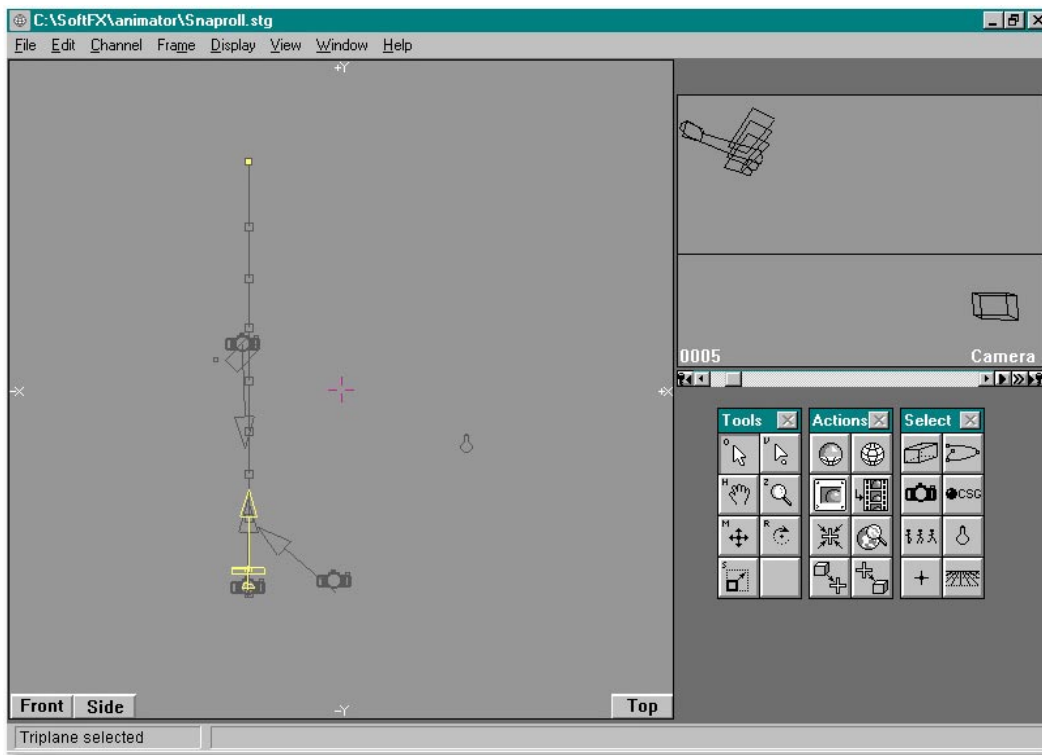


FIGURE 3.11 Full Screen View Mode

2. Left-clicking either of the left-hand view buttons will take you to expanded versions of those views.
3. Select the **View-> Large Camera View** menu item to see the CAMERA view in expanded form (Figure 3.12). Notice that the Camera scroll bar remains in its mid-right hand position. Select this item again to toggle back to the other window views.

All the Play Bounded, Play 3D (filled arrow) and frame scroll bar items remain available for use while in Large Camera View mode.

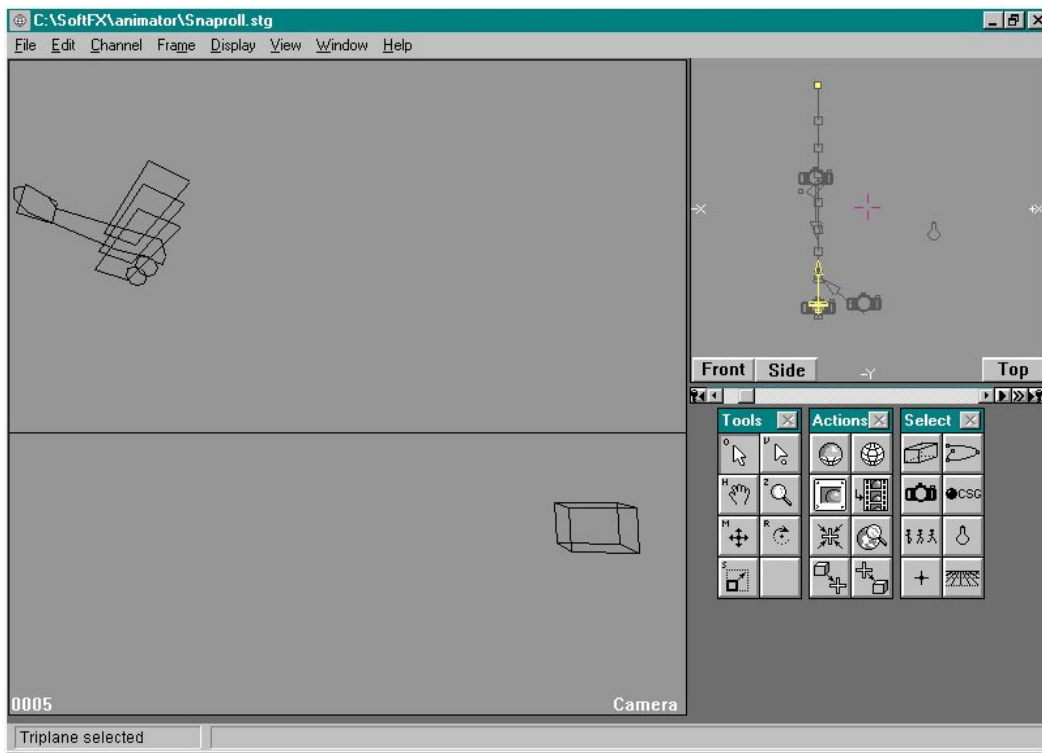


FIGURE 3.12 Large Camera View enabled

4. Press Shift + F4 to return to the normal, 4-view Animator interface.

You return to the 4-view interface.

SCROLL BAR PREVIEW

1. Left-click-and-hold the scroll box in the scroll bar at the bottom of the Camera view window.
2. Continue to hold as you move the scroll box back and forth across the scroll bar.

You see a bounding box representation of the whole movie, playing in real time, as you move the scroll box (Figure 3.13). This also works in the Large Camera View as represented by Figure 3.12.

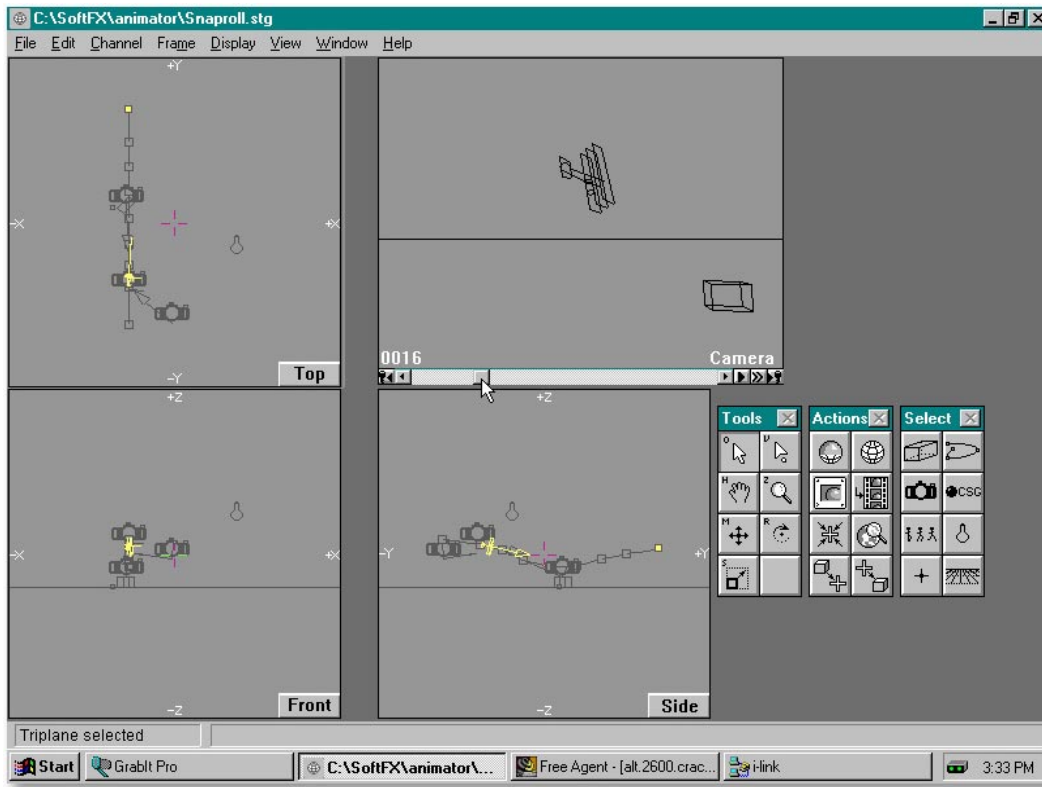


FIGURE 3.13 Represented in Bounding Boxes

3. Watch the Frame Counter as you move the scroll box.

The frame number updates in the Frame Counter.

4. Release the left mouse button.

You see a full-wireframe rendering of the frame where you stopped.

Use this method to quickly locate any frame or range of frames you want to preview or edit. The Scroll Bar Preview is a very convenient method of reviewing your work, making motion and position checks, etc. You'll find yourself using it frequently.

MAKE/PLAY PREVIEW

1. Select the **Frame-> Preview-> Make** menu item.

You'll see each frame go by as the Preview is made (Figure 3.14).

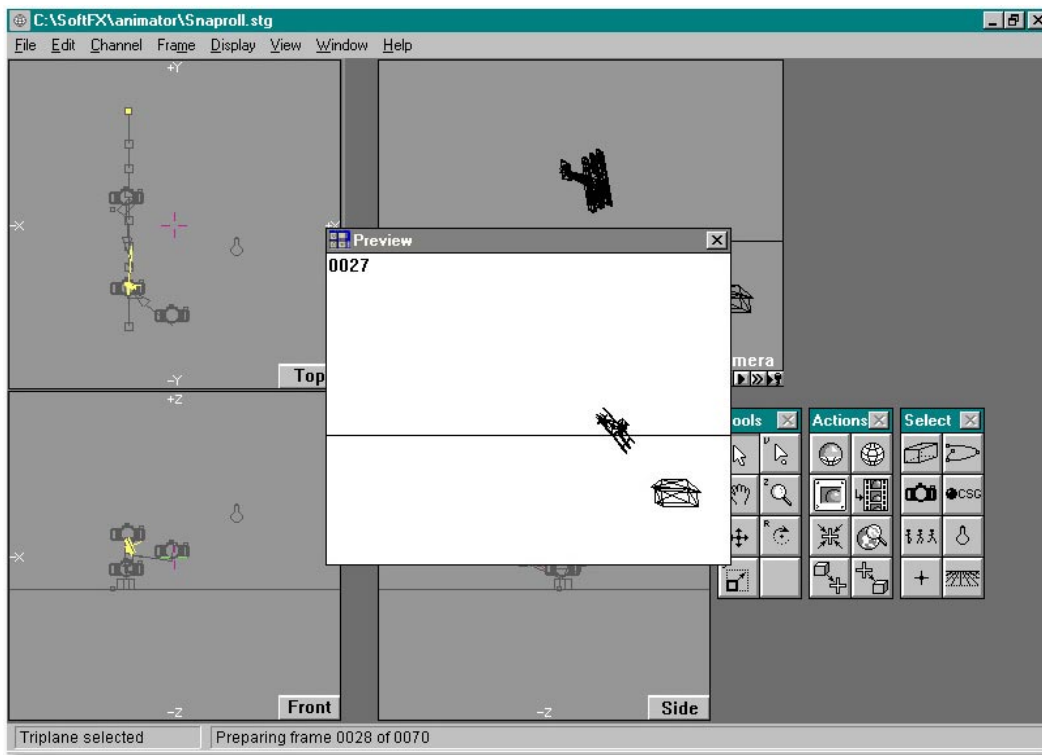


FIGURE 3.14 Creating a Preview

2. When the Preview creation cycle is finished, it will continue to play automatically.
3. Press Alt+F4, or select **Close** from the Preview dialog menu, to terminate the Preview.

*You can replay the same Preview, using the **Frame-> Preview-> Play** menu item. If you are short of RAM, use the **Clear Preview** item to erase the preview from memory. If you make a new Preview, it replaces the old one. Previews are not saved with the file. When you quit, the Preview is lost.*

MAKE A MOVIE

1. Left-click the **Render** icon button.

You see the Renderer dialog. You can choose among several alternatives that affect how your movie will appear (Figure 3.15).



Render Icon

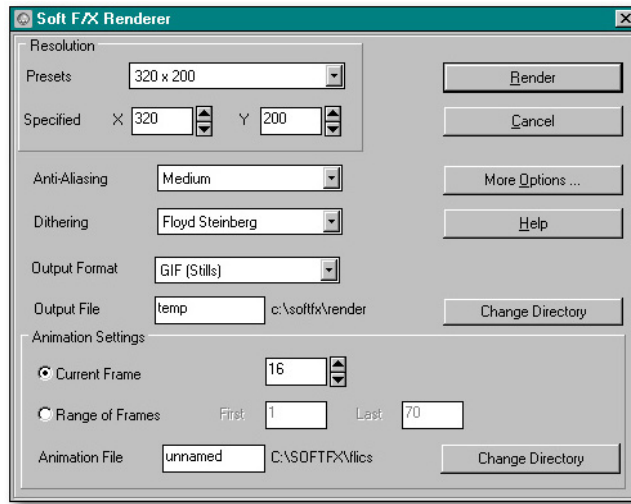


FIGURE 3.15 *Render Dialog*

2. Leave the resolution set for the default of 320 x 200. Click in the drop-down list box labeled **Output Format**, in the middle left of the dialog. Choose **Animation** from the list of options.

This will build either FLI or FLC files, depending on the resolution you have chosen. Other options can give you a higher number of colors, or generate files with specific formats for multimedia, video or film applications.

3. At the bottom of the dialog locate the button labeled **Range of Frames**. Click it.
4. Beside the Range of Frames button, you see two smaller boxes. The box on the left says “1”. The right-hand box says “70”. If those are not the numbers you see, left-click in each box and edit the numbers, to set them to 1 and 70.

These numbers represent, respectively, the first and last frames of the animation. In other words, SoftF/X will render 70 frames and then compile them into a movie.

5. Double-click the cursor in the box labeled **Animation File** (at the bottom of the dialog) and type SNAPROLL.

This names the animation file you are about to create. The directory path is displayed to the right of the filename box.

6. Click on the **Render** button at the top right of the dialog.

SoftF/X will render all 70 frames, then compile them into an .FLI file (a movie). The Render Status dialog will keep you informed about the progress of your rendering. After the first frame renders, the last line of the dialog will give you an estimated time for completion. This will take about 4 minutes on a fast machine, but as long as 35 minutes on a 386SX. This would be a good time to take a break!

7. At the end of the rendering process you're asked if you want to remove the temporary files. Select **"Yes"**.

These are the individual frames from which the animation was compiled (and compressed) into an .FLI movie. You don't need them for this example.

8. Close the Renderer dialog using the **Cancel** button.

PLAY THE MOVIE

1. Type CTRL+Y, or choose the **Window-> Player** menu item to launch the Player.
2. The **File to Play** dialog asks you to choose an animation to play. Choose SNAPROLL.FLI.

The animation loads into the Player. The Player displays the first frame of the animation.

3. Choose the **File-> Play** menu item to start the animation.
*If you have plenty of RAM, choosing **In Ram** may play back faster.*
4. When you are done viewing the animation, choose the **File-> Stop** menu item to stop the playback, or press ALT+F4 to close the Player.

MULTIPLE CAMERAS

1. Select each Camera Actor in turn by left-clicking on the camera button in the select palette.



Camera Icon

2. Observe each Camera as it highlights; notice its name in the left side of the status bar (bottom of screen).

You've been seeing everything in the CAMERA view through Cam1, so far.

3. Left-click through the Cameras; stop on **PilotCam**.

PilotCam is mounted on the Triplane to provide you a pilot's eye view of the snaproll.

4. Choose the **Edit-> Activate Camera** menu item (it's near the bottom of the **Edit** menu).

The CAMERA view is rendered through the Active Camera. The Activate Camera command makes the selected camera the one you see through.

5. Notice the change in the CAMERA view (Figure 3.16).

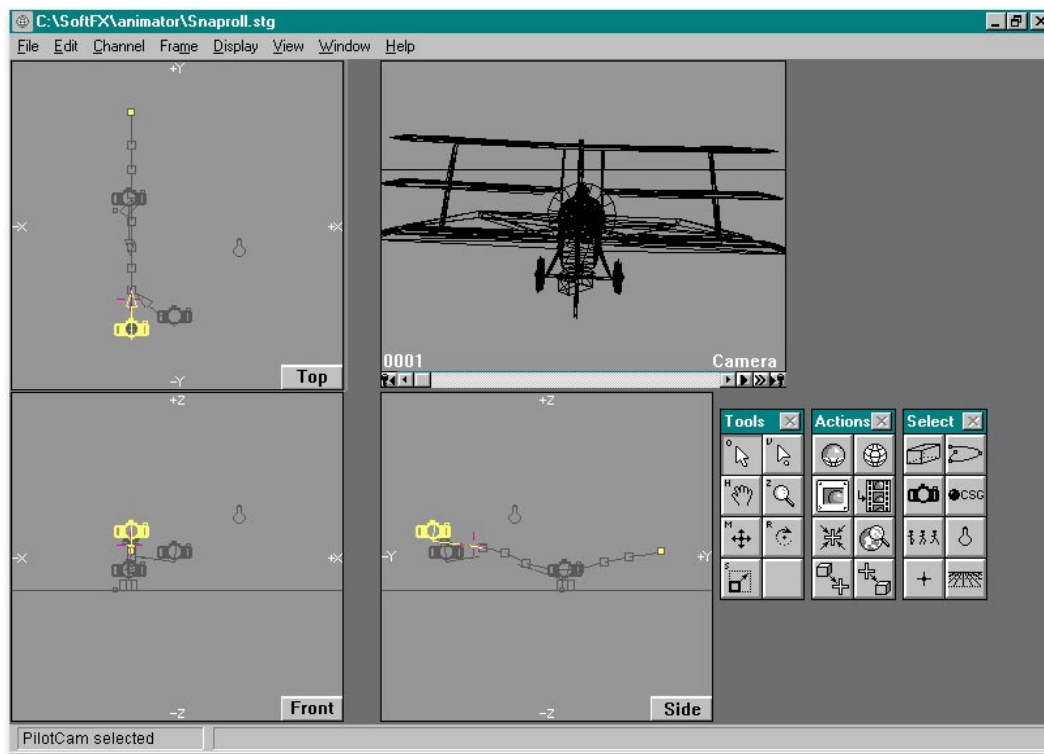


Figure 3.16 CAMERA view shows wireframe rendering from PilotCam

6. Left-click anywhere in the CAMERA view.

Notice the semicircle that appears, representing the Triplane's propeller circle. The propeller circle was made partially transparent when the Triplane was modeled. Looking through it simulates what the pilot would see through the rotating prop of the Triplane.

You don't see the propeller circle until you click in the CAMERA view because it's not part of the Triplane's custom bounding box. (If the semicircle does not appear, use the Display menu to ensure that Global Quickdraw is off.)

7. Left-click the **Play Bounded** or **Play Full Wireframe** buttons and get a quick look at how the animation plays now.

You see what the pilot would see. Notice the horizon line as the plane rolls.

8. If you like, execute **Frame-> Make Preview**.

MAKE A LOW-RESOLUTION PREVIEW RENDERING

This is a good way to get a quick, full-color preview of your work.

1. Click the **Render** icon button.
2. In the Renderer dialog, set the resolution to 80 x 50.
3. Verify that the indicated that **Range of Frames** is selected, **Range of Frames** is 1 through 70, and that the **Output Format** is Animation.
4. Name the Animation File PILOT-80.

You could name it anything. This is just an example.

5. Left-click **Render**.

You've told the Rendering engine to make a low-resolution rendering of the animation, at 80 x 50 pixels. The Renderer screen keeps you apprised of the rendering's progress.

6. When the rendering cycle is finished, select **Yes** when you're asked if you want to dispose of the temporary files.
7. Press CTRL+Y to launch the Player. In the **File to Play** dialog, double-click on PILOT-80.FLI.
8. Choose the **File-> Play** menu item to start the animation.
*If you have plenty of RAM, choosing **In Ram** may play back faster. You see the snaproll through the propeller, as the pilot would see it.*
9. When you are done viewing the animation, choose the **File-> Stop** menu item to stop the playback, or press ALT+F4 to close the Player.



Render Icon

MAKE A HIDDEN-LINE PREVIEW RENDERING

1. Select **GndCam**, then choose **Activate Camera** from the Edit menu.
2. Click on the **Render** button.
3. In the Renderer dialog, set the resolution to 80 x 50.



Render Icon

4. Verify that the indicated that **Resolution** is 320 x 200, **Range of Frames** is selected, **Range of Frames** is 1 through 70, and that the **Output Format** is Animation.
5. Open the **More Options** dialog. To make this a hidden-line animation, turn on the check box next to “Hidden Line,” then close the dialog.

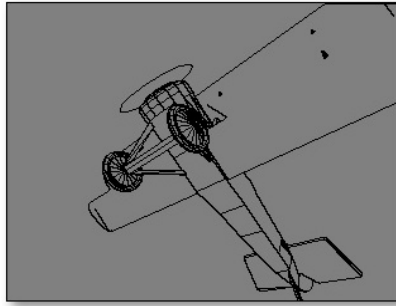


FIGURE 3.17 A still from the hidden-line rendering SNAPROLL.STG from GndCam, at 320 x 200 resolution

6. Render, then play back the animation (Figure 3.17).

Hidden-line animations render very quickly and often give you all the motion and position information you need.

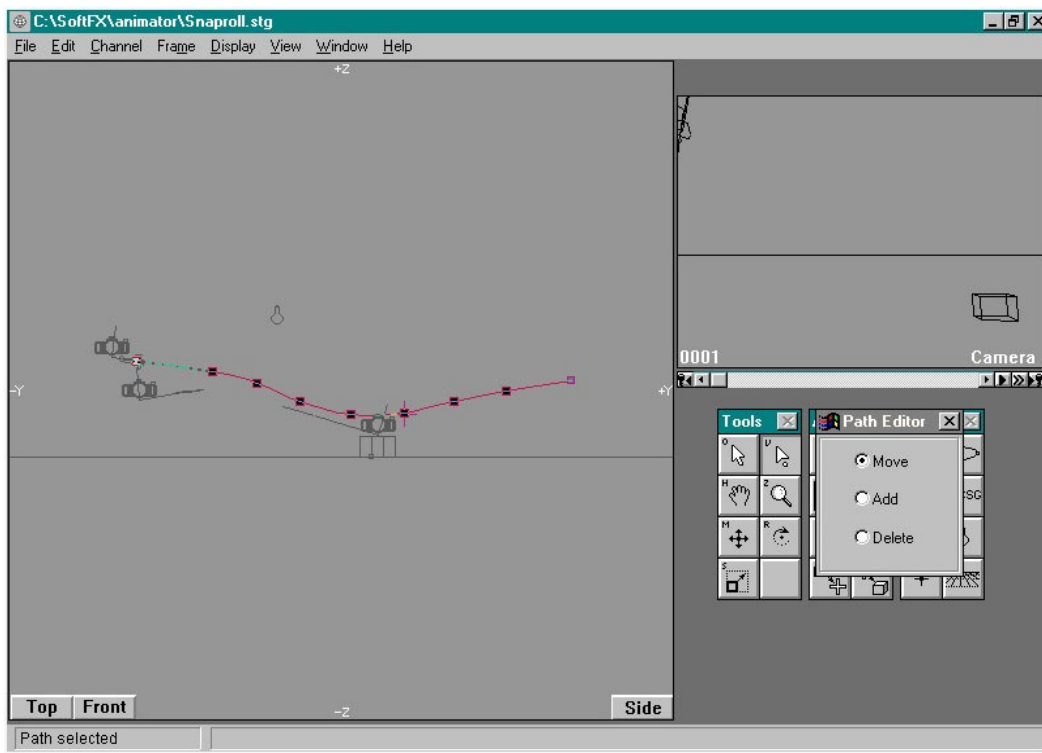


FIGURE 3.18 Path Edit mode

RESHAPE A PATH

1. Use **File -> Open** to refresh SNAPROLL.STG. Turn off Camera Field of View feedback, if it's on (use the Display menu).
2. Make **Cam1** the Active Camera.
3. Left-click the **Full-World View** icon button.
4. Left-click SIDE to go to the expanded SIDE view.
5. Select the **Path** (left-click on a path node).
6. Choose the **Node Select** tool from the Tools palette.

The Path changes color, to show that you are in Path Edit mode. The cursor changes to the Path Edit Cursor. The Path Editor dialog appears in the lower right of your screen (Figure 3.19).



Full World View



Node Select

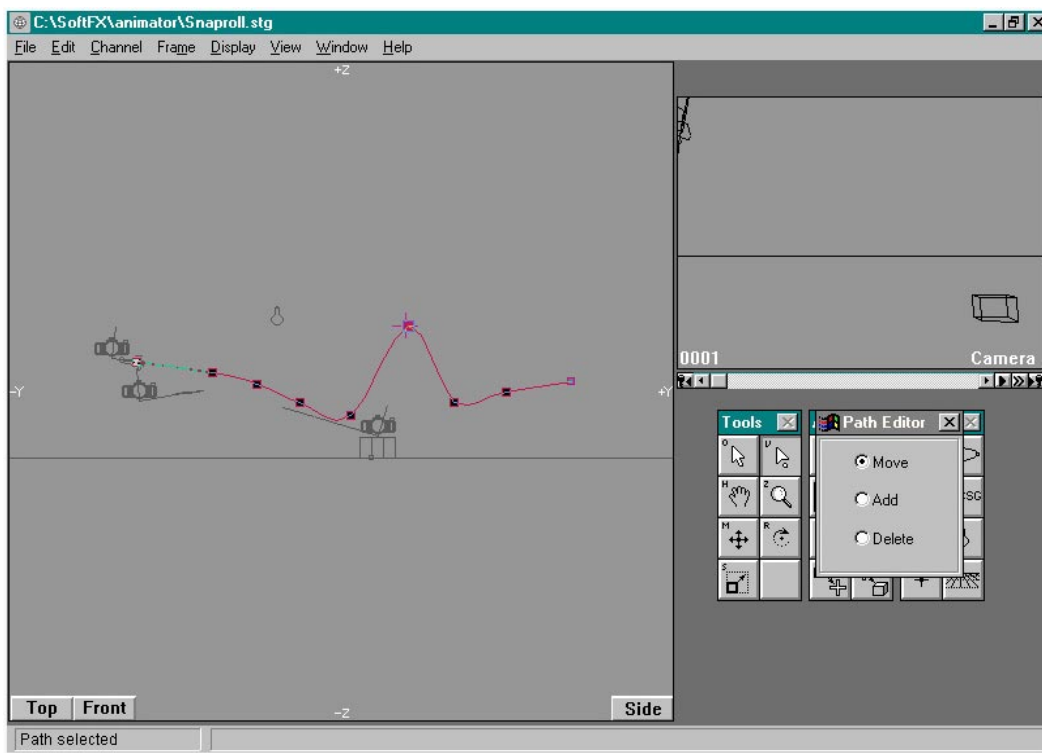


FIGURE 3.19 Moving a Path Node

7. Position the cursor over a path node you'd like to move. Left-click-and-hold while you drag the mouse.

The node changes color when selected and moves along with the cursor.

8. Release the mouse button to place the path node (Figure 3.20).

The node remains where you placed it. You can pick the node up again and reposition it as many times as you like, changing Views to place it in all three axes.

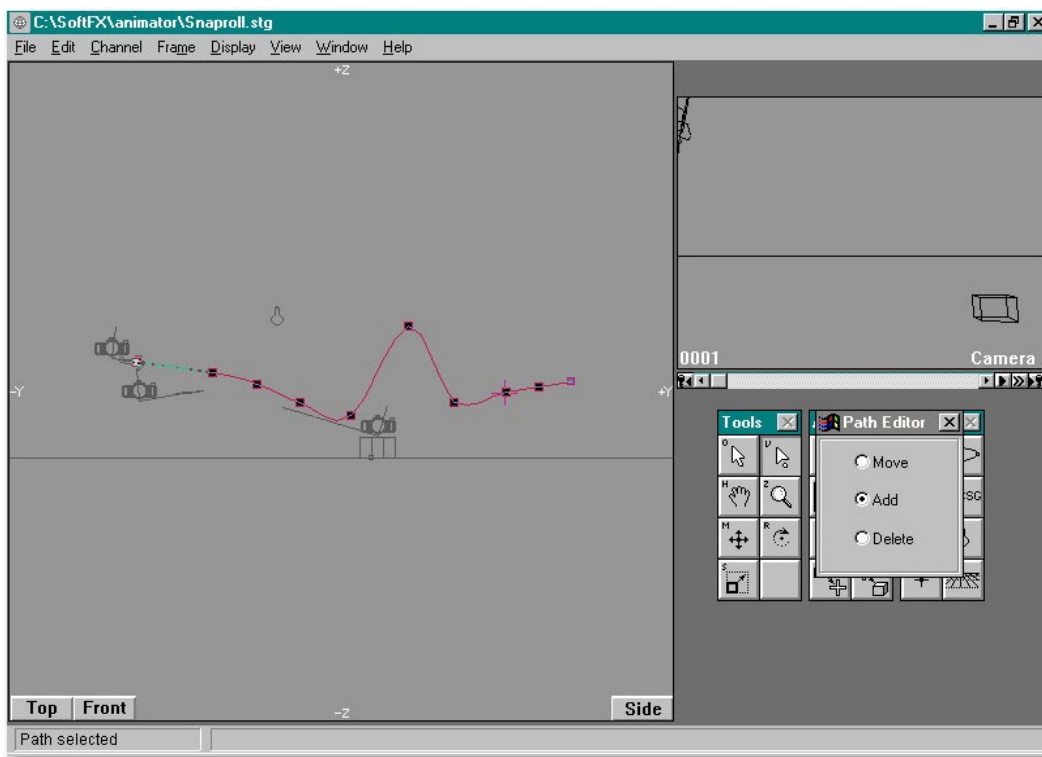


FIGURE 3.20 A new path node is added

9. Experiment with reshaping the Path, moving the end points as well as the others.

Try moving the Control Points in all three views, not just the SIDE view.

10. Preview the animation with the **Frame-> Make Preview** menu item to see how the Triplane travels its new route.

The Triplane may veer out of camera range at times, if the path has been changed a lot.

*Clear the Preview (**Frame-> Preview-> Clear Preview**) when you have finished.*

11. Left-click on the **Add** button in the Path Editor dialog.

The Path Edit tool is ready to add a new node to the Path (Figure 3.21).

12. Left-click on the second path node from the right (Figure 3.21).

A new node appears, halfway between the node you clicked on and the next node to the right. The Add Node function adds a node immediately after the node you click on. Since the node order for this Path runs from left to right, the new node was added to the right.

Note how the curve of the Path changes around the new node. You can add as many nodes as you like, moving them around until you get just the Path shape you want.

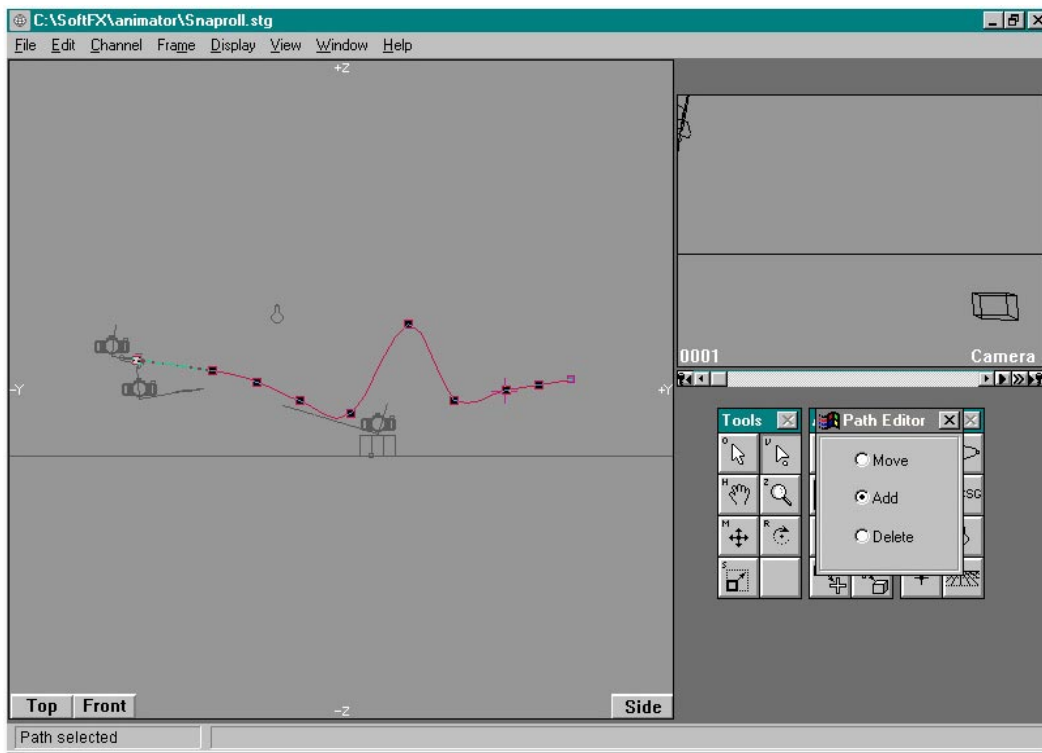


FIGURE 3.21 A new path node is added

13. Left-click the **Delete** button in the Path Editor dialog. The Path Edit tool is ready to delete a node from the Path.
14. Left-click on the node you just added (Figure 3.22). The new node disappears. The curve of the path changes again.

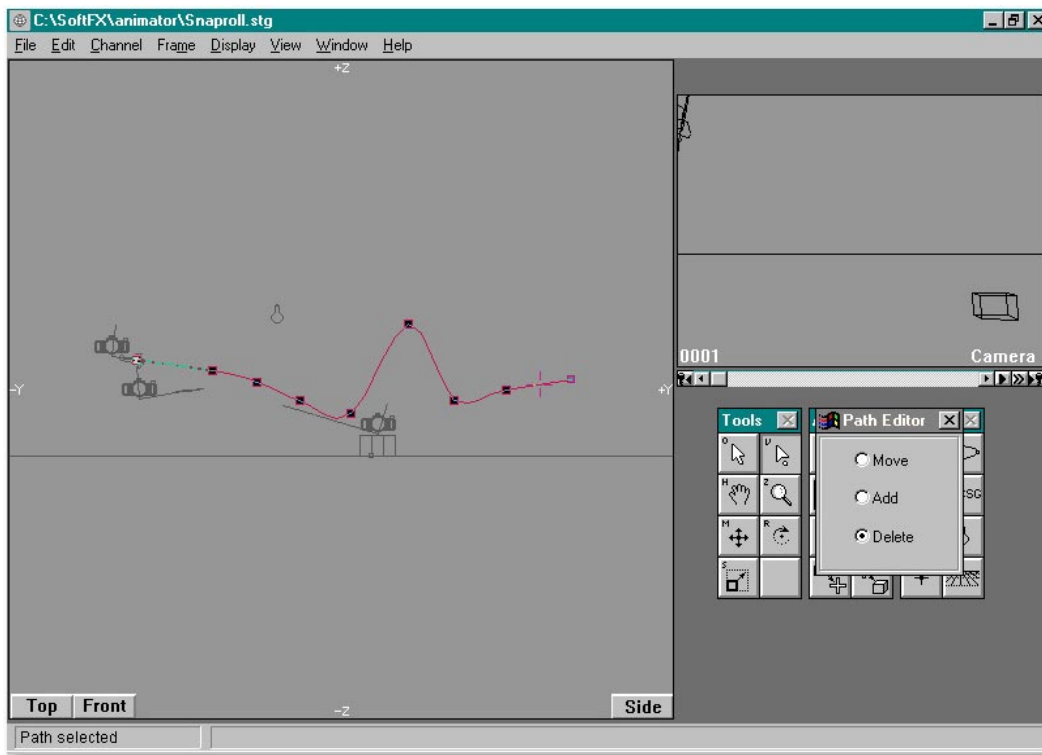


FIGURE 3.22 The new path node is deleted

15. Leave Path Edit mode by right-clicking in the View Window, or by selecting another tool from the Tools Palette.

Chapter 4: Special Effects

SoftF/X contains a suite of pre-programmed Special Effects you can apply with a few mouse clicks. Producing these effects manually would require considerable modeling effort.

In this section, you'll also get your first look at the Keyframer, the companion module to the Animator.

1. Open FX-FRAME.STG.

You see a finely-subdivided, but simple, cubical frame structure. (Figure 4.1)

The model is divided into such a detailed network of polygons so it will deform more smoothly when you apply special effects to it.

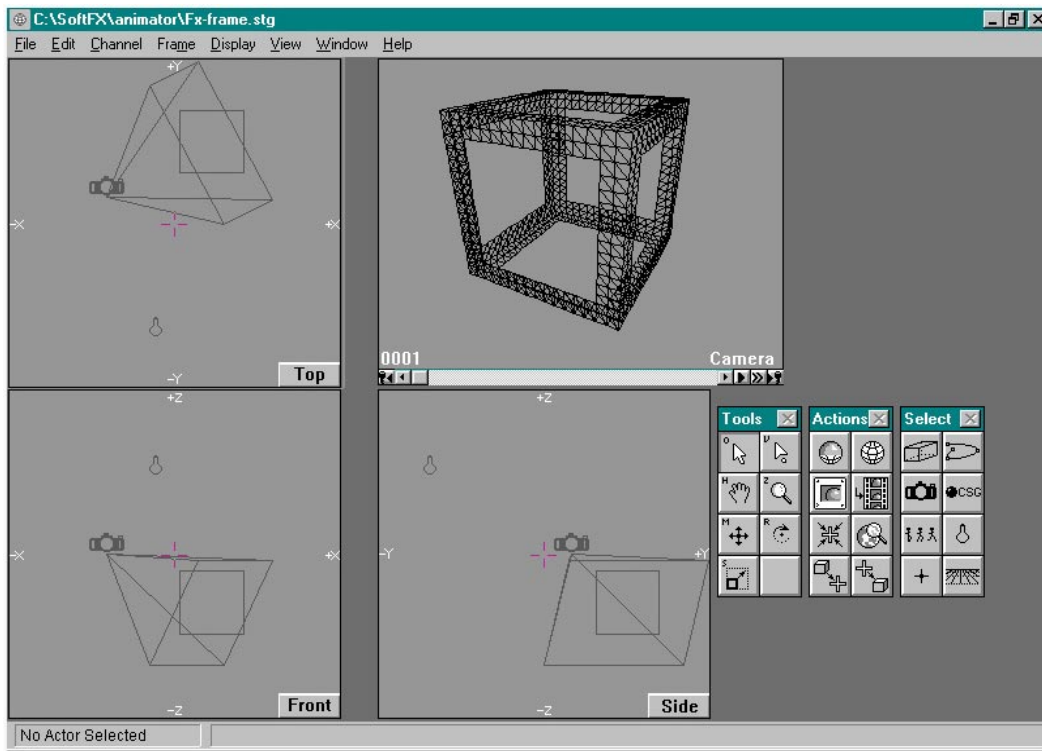


FIGURE 4.1 FX-FRAME.STG with Global Quickdraw off, and Draw bounded on (both in Display Menu).

2. Left-click the Draw Hidden Line button to get a look at the model without the internal lines.



Draw Hidden Line

INTRODUCTION TO THE KEYFRAMER

1. Open the Keyframer by pressing Ctrl+K or selecting the **Window-> Keyframer** menu item.

2. Examine the features of the Keyframer in Figure 4.2.

Don't worry about making sense of it all yet. It will soon be familiar to you.

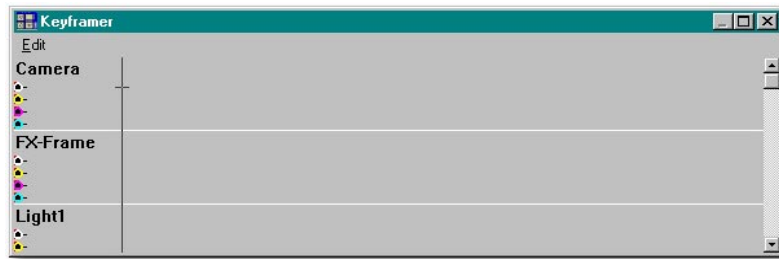


FIGURE 4.2 The Keyframer

3. You'll need to add some frames to the animation.

It only has one frame at the moment.

4. Select the Keyframes **Edit-> Set Number of Frames** menu item.

*The **Frames** dialog shows the total number of frames in the animation (Figure 4.3).*

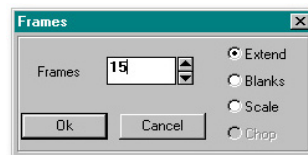


FIGURE 4.3 Frames dialog

5. Type 15 in the Frames dialog. Left-click on the **Extend** option button, then click **OK**.

The single keyframes extend to the right, creating timelines 15 frames long.

6. Position the Crosswires on the topmost keyframe marker (Figure 4.4).

The active channel is "Costume." Observe that the active channel is identified in red at the far right of the menu bar. Continue down, one channel at a time, as you observe which channel is active. Unused channels are named, as well as channels occupied by timelines.



FIGURE 4.4 Timeline Channels

Each Actor is controlled by four timeline channels:

- Costume
- Position
- Rotation
- Scale/Size

7. Double-click on the Costume keyframe for FX-Frame. Key frames are identified by a circle lying on the red line. Analogous to beads on a piece of thread, the costume channel keyframe is any “bead” on the “thread”. In this instance, it is on the far right of the costume channel for the Actor FX-Frame.

You see the Costume dialog for FX-Frame (Figure 4.5).

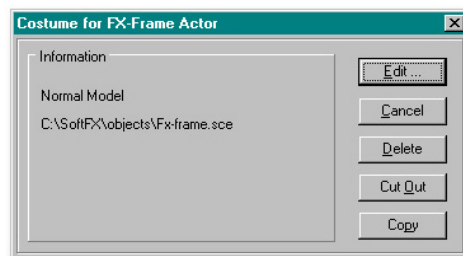


FIGURE 4.5 Costume info/edit dialog

8. Dismiss the dialog by clicking on the **Cancel** button.

Explore the dialog boxes for the other channels this way.

If you like, experiment with the other command buttons in the dialogs that appear when you double-click a keyframe. You can’t hurt anything. If you want to restore the animation to its original state, just reload it into the Animator without saving any changes.

The Costume channel determines when the Actor exists. You’ll notice nothing happens when you left-click the Costume channel for the Camera. That’s because there’s nothing to edit; the Camera must exist in every frame (it’s the only type of Actor for which this is true).

ADD AN EFFECT

1. If you aren't still in the Keyframer, type CTRL+K to go there.

2. Double-click on the Costume keyframe for FX-Frame.

Special Effects are always applied to a Model's Costume channel.

3. Left-click the **Edit** button.

The Costume Model dialog appears (Figure 4.6).

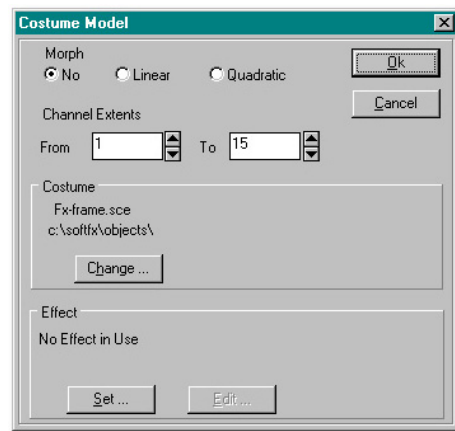


FIGURE 4.6 *Costume Model dialog*

4. Left-click the **Set** button in the **Effect** group, located in the lower left of the dialog.

The Select Animation Effect dialog appears.

5. Select **MODULATE.EFX** from the list of available Special Effects (Figure 4.7).

The Modulate Effect dialog appears. The description tells you what the effect does. The parameters enable you to modify the effect.

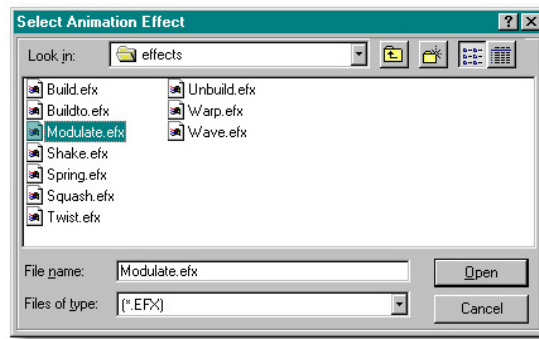


FIGURE 4.7 Select Animation Effect dialog

6. Change the **Axis** to **F/B** (Front/Back), and click **OK** (Figure 4.8). Click **OK** again to close the Costume Model dialog, and Ctrl+K to close the Keyframer.

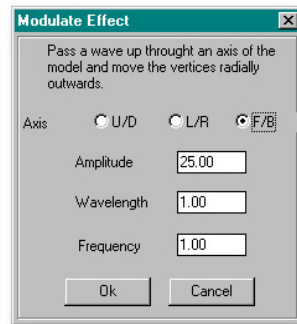


FIGURE 4.8 Modulate Special Effect dialog

7. Left-click anywhere in the CAMERA view.
You'll see a wireframe rendering. The effect is visible now (Figure 4.9).

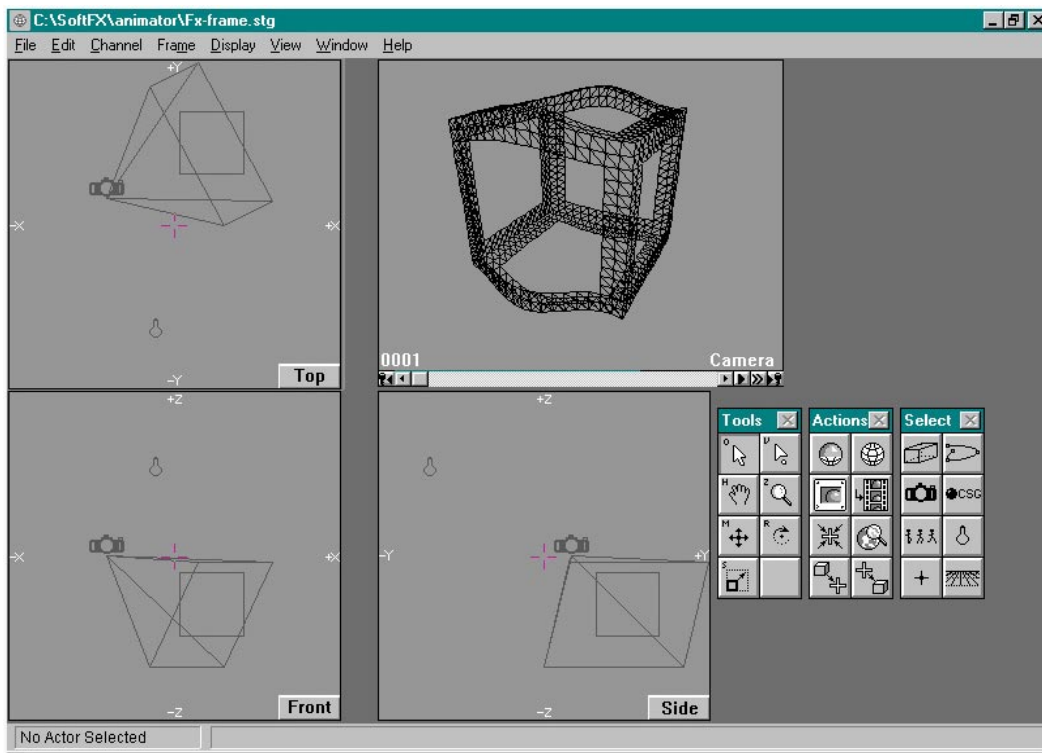


FIGURE 4.9 Modulate special effect applied to the FX-Frame

NOTE: When you apply a special effect to a model, the model itself isn't deformed. The Effect is expressed only in a rendering.

RENDER THE ANIMATED EFFECT

1. Left-click the **Render** icon button.
2. Leave the resolution set for the default of 320 x 200. Click in the box labeled **Output Format**, in the middle left of the dialog. Choose **Animation** from the list of options.
3. At the bottom of the dialog see the button labeled **Range of Frames**. Click it.
4. Beside the Range of Frames button, you see two smaller boxes. The box on the left says "1". The right-hand box says "15". If those are not the numbers you see, left-click in each box and edit the numbers, to set them to 1 and 15.



Render Icon

SoftF/X will render 15 frames and then compile them into a movie.

5. Double-click the cursor in the box labeled **Animation File** (at the bottom of the dialog) and type FX-FRAME.

This names the animation file you are about to create. The directory path and filename is shown to the right of the filename.

6. Click on the **Render** button at the top right of the dialog.

SoftF/X will render all 15 frames, then compile them into an .FLI file (a movie). The Renderer status dialog will keep you informed about the progress of your rendering. After the first frame renders, the last line of the dialog will give you an estimated time for completion.

7. At the end of the rendering process you're asked if you want to remove the temporary files. Select "Yes".

These are the individual frames from which the animation was compiled (and compressed) into an .FLI movie. You don't need them for this example.

8. Close the Renderer status dialog by left-clicking **Cancel**.

PLAY THE ANIMATED EFFECT

1. Type CTRL+Y, or choose the **Window-> Player** menu item to launch the Player.

Unlike single images, animations are not displayed automatically after rendering. Large animations can use enough memory that it is usually best to launch them separately.

2. The **File to Play** dialog asks you to choose an animation to play. Choose FX-FRAME.FLI.

The animation loads into the Player. The Player displays the first frame of the animation.

3. Choose the **File-> Play** menu item to start the animation.

*If you have plenty of RAM, choosing **In Ram** may play back faster.*

4. When you are done viewing the animation, choose the **File-> Stop** menu item to stop the playback, or press ALT+F4 to close the Player.

VARYING THE EFFECTS

Try making these variations:

(You can also edit Special Effects directly from the Animator, without going through the Keyframer. Select the Actor you want to edit, then choose the **Edit-> Special Effect** menu item.)

- Change the Axis for Wave to **U/D** (Up/Down).
- Change the Amplitude to **10** or **50**: Amplitude (the “height” of the wave that passes through the Actor) is expressed as a percentage of the dimension of the model. An amplitude of 25 means the wave will be 25% of the size of the model.
- Change the Wavelength to **2** or **.5**: Wavelength (the “length” of the wave) is expressed as a proportion of the model. A Wavelength of 2 means the wave will be two times as long as the model.
- Change the Frequency to **2** or **.5**: You won’t notice a change in the CAMERA view when you change the Frequency, because Frequency pertains to how many times the effect cycles over the duration of the channel. The dimensions of the effect don’t change, only its rapidity.

To see what a change in Frequency does, change the Frequency and Play the animation.

Frequency settings that are not whole numbers (like **0.50** or **1.40**) will cause a “hitch” in the motion as it plays back, because the wave will travel through a fractional portion of the Model each time the effect cycles. This can be desirable, or not, depending on your intentions.

HIDDEN LINE RENDERING / HIDDEN LINE ANGLE

An alternative to a fully shaded rendering is a hidden line rendering, using a large value for the hidden line angle. This makes a cartoony, sketch-like animation that renders very rapidly.

It’s good, sometimes, to demonstrate work-in-progress this way, before you’ve refined your surface textures and lighting.

Here’s how to make a hidden line rendering using the hidden line angle option:

1. Left-click the Render icon button.

*The **Renderer** dialog appears.*

2. In the Renderer dialog, left-click the **More Options** button at the middle right of the dialog.



Render Icon

The **Renderer Options** dialog appears (Figure 4.10).

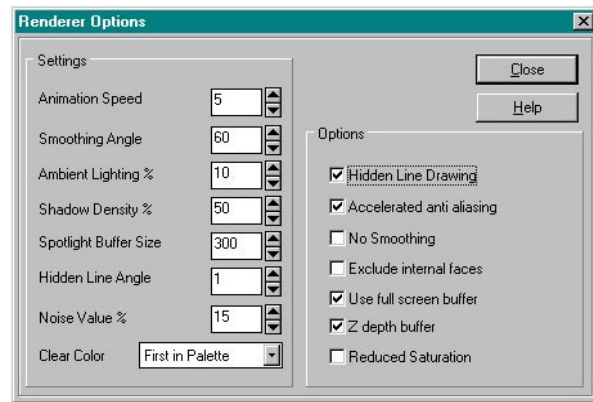


FIGURE 4.10 *Renderer Options dialog*

3. Turn on the **Hidden Line Drawing** check box, at the top of the Options group (Figure 4.10).

This enables the Hidden Line rendering mode, and disables the normal rendering mode.

4. Edit the value in the **Hidden Line Angle** box, the third from the bottom of the **Settings** group, to read **90**, then click **Close**.

The box to the right of Hidden Line Angle has the default value 1. This is too small for our purposes.

5. Continue with the rendering as before, giving the animation a different name.

You'll notice the rendering cycle proceeds more rapidly. This is the major advantage of Hidden Line rendering.

6. Play the animation.

Notes on using Hidden Line Angle:

Models in SoftF/X are composed of triangular “faces”, as you see in the wireframe and hidden line views. Hidden line angle refers to the angle at which faces meet. If they meet at an angle less than the hidden line angle, SoftF/X won't render the edge.

This effectively removes edges you don't need to see.

If you set the value very high (the maximum is 90 degrees), then only the silhouette of the model will render, along with acute angles and color transitions.

A low setting (like the default of “1”) will render every edge except those between nearly coplanar (flat) faces. Experiment with different hidden line angles to see the effects you

can produce this way.

If you set the hidden line angle to 5 degrees and render the animation, you'll see where the "modulate" effect temporarily increases the angle between faces to more than 5 degrees. These edges will flicker in and out of sight as they bend more, and then less, than 5 degrees. This gives a "marching line" effect.

You should try the UNBUILD.EFX special effect with either the hidden-line or full-render mode.

Chapter 5: Flying Logos

CREATING A STATION ID

You've learned several animation tools by the time you've reached this point. Now you're prepared to create a complex animation from scratch. This will be a short animation of the type often used by television stations to identify themselves.

CREATE A NEW ANIMATION

1. Open a **New** animation by pressing CTRL+N or selecting the **File-> New** menu item.

New animations open with only a single frame. Often, it is helpful to work in only one frame until you have added and positioned all the Actors you will be using, then increase the number of frames to scale up the animation.

*Since the Keyframes for each Actor will be moved to the last frame, you will need to position the Actors as you want them to appear at the **end** of the animation, not the beginning.*

2. Add an Actor by pressing CTRL+A or selecting the **Edit-> Add Actor** menu item.

The Add Actor dialog appears.

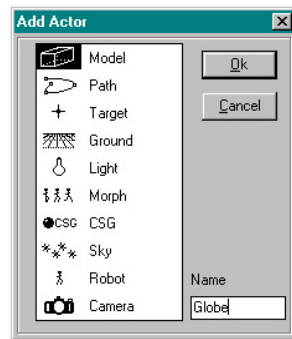


FIGURE 5.1 Add Actor dialog

3. Select the **Model** actor type, and change the model's name to **Globe** (Figure 5.1) Click **OK**.

The Select Model file dialog appears.

4. Select **GLOBE.SCE**, and click **OK**. Left-click in the **Camera** view.

The GLOBE.SCE model is loaded into the center of the workspace (Figure 5.2). The Camera is too close to it for you to see the model well, so you'll need to move the Camera back.

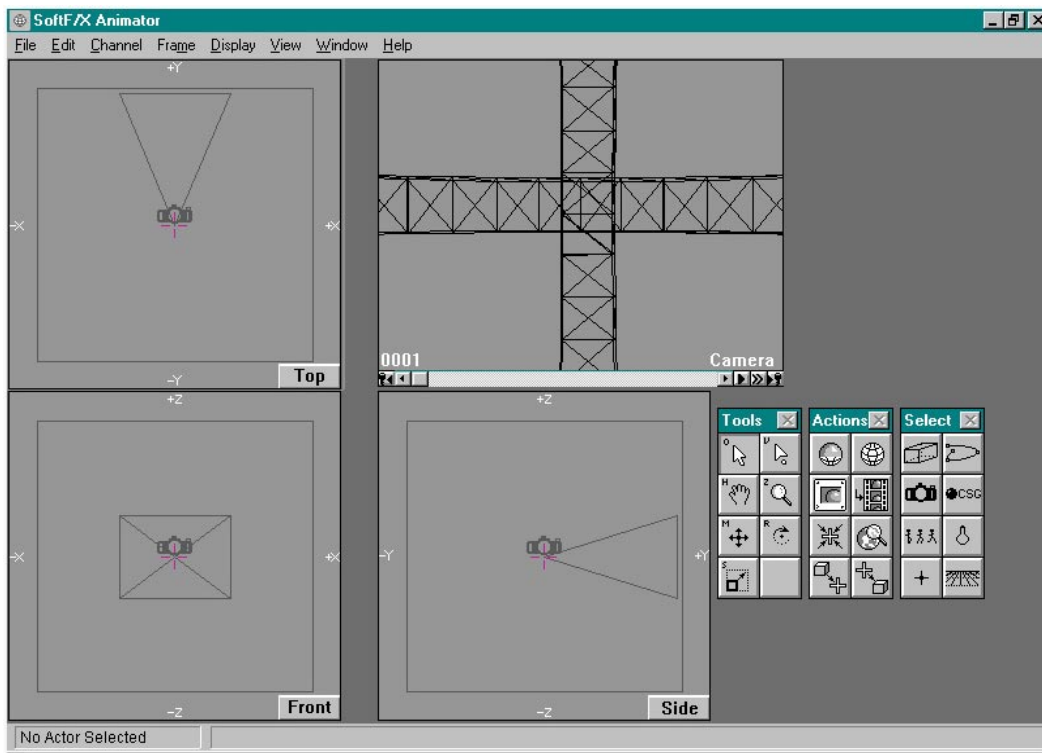


FIGURE 5.2 GLOBE.SCE model loaded

5. Select the **Camera**. Choose the **Channel-> Add Movement** Channel menu item.
The Movement Channel dialog appears (Figure 5.3).

6. Change the **Front/Back** coordinate, at the bottom center of the dialog, to -10.0 (Figure 5.3). Click OK. Left-click in the **Camera** view.

This will move the Camera back so the Globe is centered. The Globe is still a little too small, though.



Camera Icon

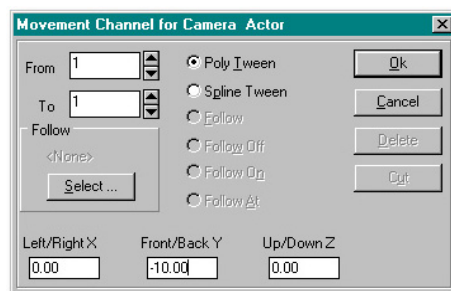


FIGURE 5.3 Changing Front/Back coordinates

Note: All the numeric entries in this tutorial can also be made interactively with the

mouse. The numbers are entered to make it easier to line up the models, eliminating a lot of the trial-and-error work that went into building this tutorial. By all means, feel free to use click-and-drag to perform these operations!

7. Select the **Globe** model. Choose the **Channel-> Add Scaling Channel** menu item.

The Scaling Channel dialog appears.

8. Change the **Width**, **Length** and **Height** values, at the upper left of the dialog, to **2.00**. Click **OK**. Left-click in the **Camera** view.

9. Click on the **World Zoom** button in the Actions palette so you can see the whole scene again (Figure 5.4).



Model Select Icon



World Zoom

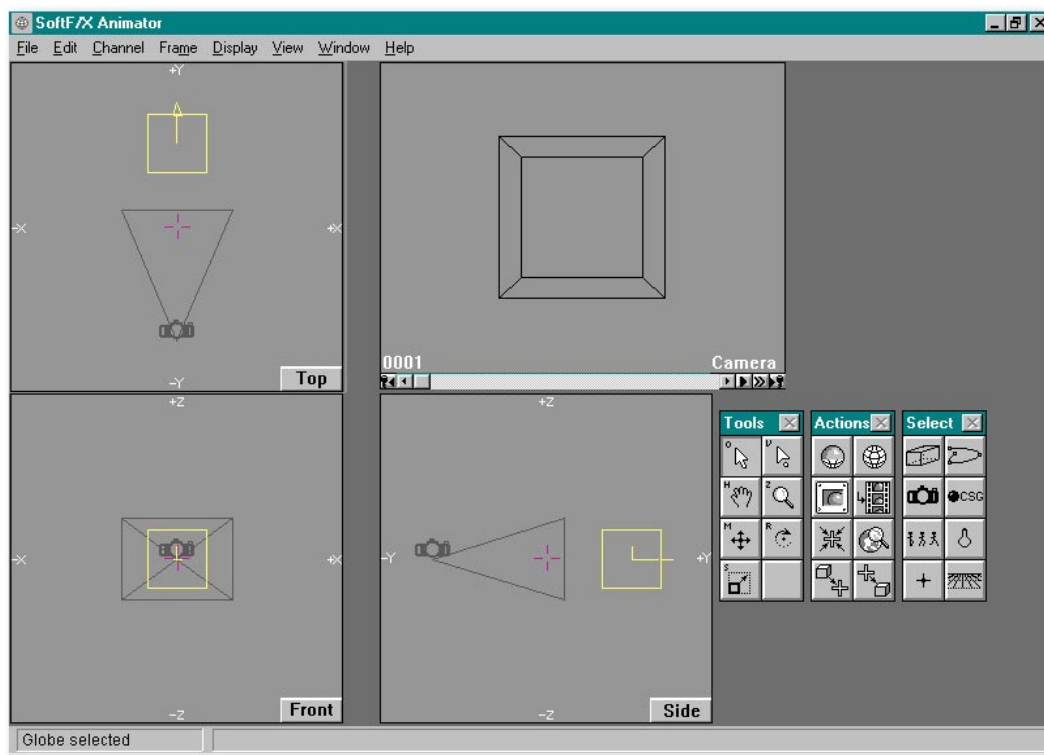


Figure 5.4 Globe added and scaled, and Camera moved

10. Make a test rendering by left-clicking on the **Render** button in the Actions palette, then clicking the **Render** button in the Renderer dialog. Verify the normal default is 320 x 200, not Hidden Line Drawing; these are acceptable for a quick test.

The Renderer generates a picture (Figure 5.5). This picture doesn't look very good because only the default light source, the Camera Light, is turned on. This light is right next to the Camera, and will tend to wash out and cause glare with most models. To get a better



Render Icon

appearance, we need to set up our lights the same way a studio photographer would.

The benefit of having the Camera light is that you can do quick setups and tests with other Actors, before getting into the details of set lighting. It also means you'll never have the embarrassing experience of rendering an image (or even worse, an entire animation) with no lights, which of course would turn out completely black.

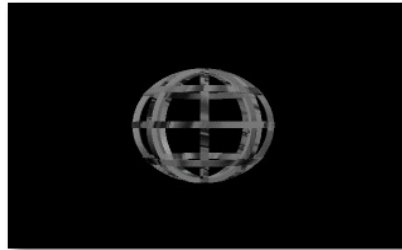


FIGURE 5.5 Rendered Globe

11. Close the Viewer and left-click on the **Cancel** button in the Render Status dialog.

ADD LIGHTS

1. Add an Actor by pressing CTRL+A or selecting the **Edit-> Add Actor** menu item.
The Add Actor dialog appears.
2. Select the **Light** actor type, and change the light's name to **KeyLight**. Click **OK**
The Edit Light Settings dialog appears.
3. Accept all the default settings in the Edit Light Settings dialog. Click **OK**.
4. Select the **KeyLight** Actor.
5. Left-click-and-drag the KeyLight to the upper right corner of the Front View, and the top center of the Side view (Figure 5.6).



Light Select Icon

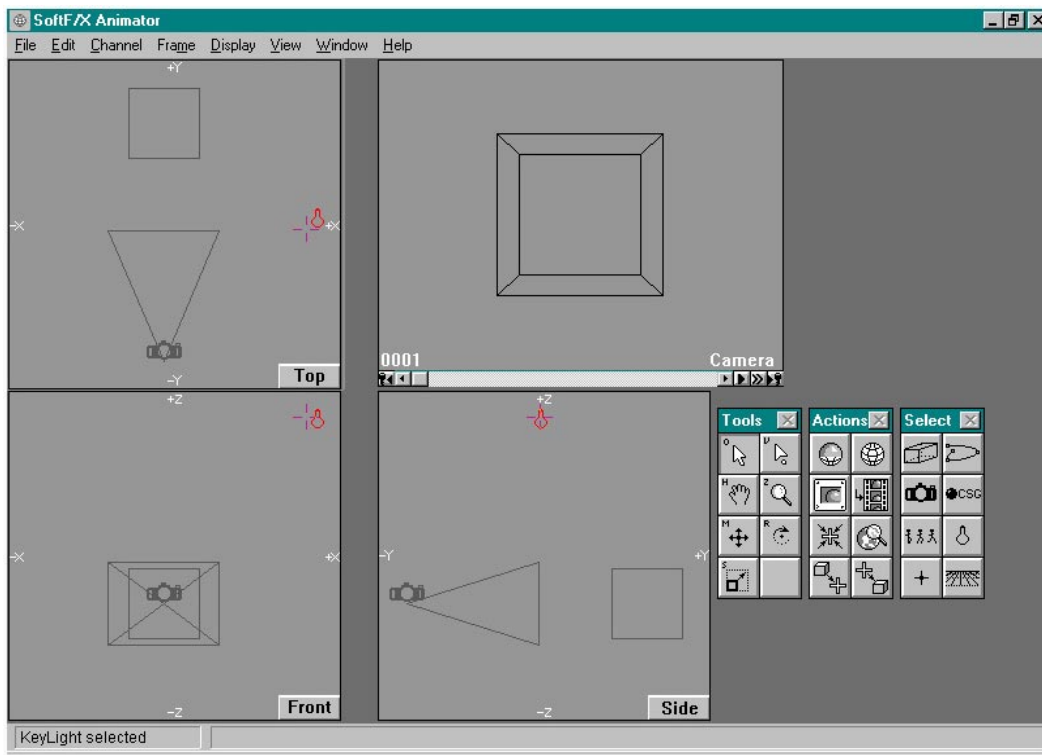


FIGURE 5.6 Moving the KeyLight

6. Add another light by pressing Ctrl+A or selecting the **Edit-> Add Actor** menu item.
7. Select the Light actor type again, and change the light's name to **FillLight**. Click **OK**

The Edit Light Settings dialog appears.

The Fill Light is only used to soften shadows, not to brightly illuminate the scene. You want it to be fairly dim, so you'll need to change the default color setting in the Edit Light Settings dialog.

8. Click on the **Light Color** patch in the dialog.

The Set Light Color dialog appears.

9. Drag the Luminance slider at the far right-hand edge of the dialog down about three-quarters of the way to the bottom of the slider range.

The Luminance and Red, Green, & Blue values should all read somewhere around 60.

10. Click **OK**, and **OK** again in the Edit Light Settings dialog.
11. Left-click-and-drag the **FillLight** to the middle left of the Front View, and the left center of the Top view. (Figure 5.7)

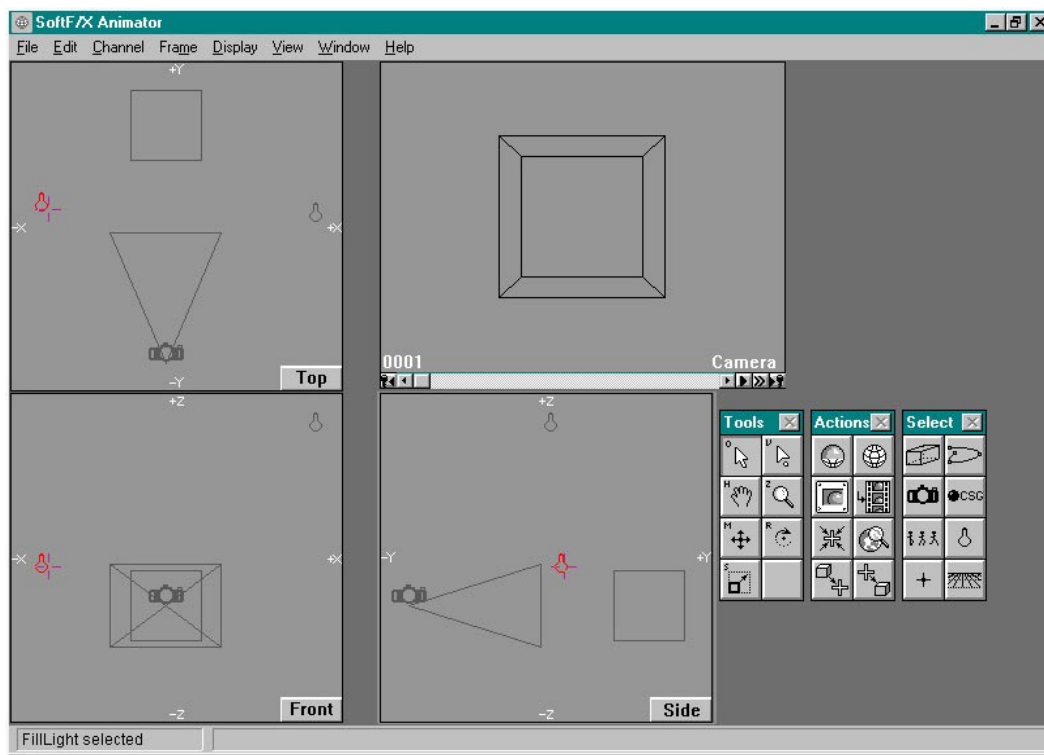


FIGURE 5.7 Moving the FillLight

12. Make a test rendering by pressing CTRL+R.
This tells the Renderer to go directly to rendering an image, using the exact settings you used the last time.
The Renderer generates a picture. (Figure 5.8)

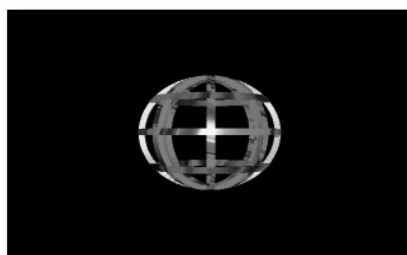


FIGURE 5.8 This picture looks better, with more balanced lighting.

13. Close the Viewer and left-click on the **Cancel** button in the Render Status dialog.

BUILD A MODEL FROM A POSTSCRIPT FONT

1. Go to the Modeler by pressing **CTRL+M**, or select the **Window-> Modeler** menu item.

If you are running the Demo version of SoftF/X, skip ahead to the “PLACE NEW ACTORS IN ANIMATION” section. You may add the already-saved CH57.SCE model, instead.

2. Select the **Edit-> Build ATM Font** menu item.

The font selection dialog appears.

The default subdirectory is \FONTS, where you will find the sample blippo.pfb font file. If you have other Postscript Type 1 fonts elsewhere on your system, feel free to select one of them for this exercise.

3. Choose a font (*.pfb file), and click **OK**.

The Text Builder Utility dialog appears (Figure 5.9).

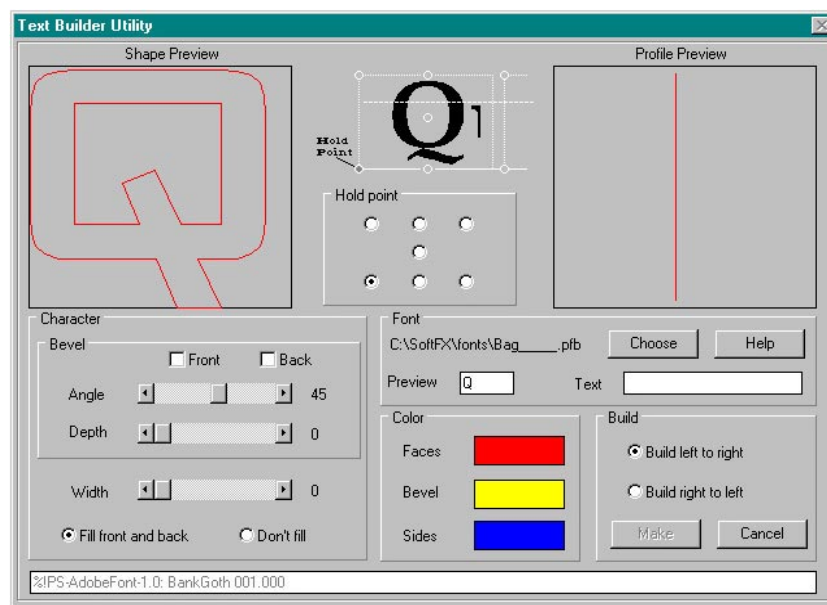


FIGURE 5.9 Text Builder dialog

4. Set the dialog parameters to match Figure 5.9.:
 - Set the Character Bevel to **Front**, Angle **45**, Depth **32**.
 - Set Character Width to **16**, and turn on **Fill front and back**.
 - Type **57** in the Text box.

- Change the Face, Bevel and Sides color boxes to **white**.
- Check **Build left to right**
- Check the **center** Hold point

5. When all the settings are correct, left-click the **Make** button in the lower right corner of the dialog.

The Text Builder will create a model of the number 57.

6. When the model has been created, left-click the **World Zoom** button, then the **Side** view button.

The cursor is exactly in the center of the 57, as shown in the Side view.



World Zoom

7. Without moving the cursor, select the **Attributes-> Set Model Center** menu item.

The small yellow crosshair is now in the center of the 57 model.

The Model Center is the reference point you can use to Move, Rotate and Scale models. Placing it in the center of the 57 model makes it much easier to align to the Globe later on.

8. Left-click the **Face Attributes** button from the Actions palette, or select the **Attributes-> Face Attributes** menu item.

This is the fourth button down in the left-hand column of the Actions palette.

The Set Face Attributes dialog appears.

9. Left-click the **Set** button in the **Maps** section, near the center of the dialog.

10. The Choose Map dialog appears, with no maps loaded. Left-click **OK**.

11. Left-click the **Edit** button in the **Maps** section.

The Surface Map Settings dialog appears (Figure 5.10).

Don't worry about all the options, we'll only be dealing with a few this time.

The Reflection Image section is in the middle of the right side of the dialog. This is where you choose maps to simulate reflective materials like chrome, gold or mirrors. The higher the Mix%, the closer the results are to a perfect mirror.

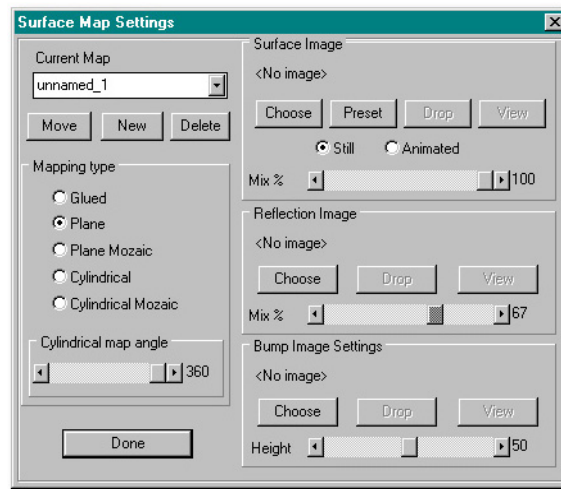


FIGURE 5.10 Surface Map Settings dialog

12. Drag the Mix% slider up to **67**.
This will simulate reflective, polished metal.
13. Left-click on the **Choose** button in the Reflection Image section.
The Load Image for Map dialog appears.
14. Select the **DESERT.GIF** map, and click **OK**.
The Surface Map Settings dialog reappears. You can choose SKY-SUN.GIF instead, if you want a more chrome or silver tone.
15. Left-click on the **Move** button in the upper left corner of the dialog.
*In the Side view, a thin green bounding box shows the Map axes.
The small green square, circle and triangle in the corners of the bounding box are handles you can use to move and resize the Map.*
16. Left-click-and-drag the square handle to the left, until the left side of the bounding box is clear of the 57 model.
17. Left-click-and-drag the circular handle to the right, until the right side of the bounding box is clear of the 57 model.
You should end up with something like Figure 5.11.

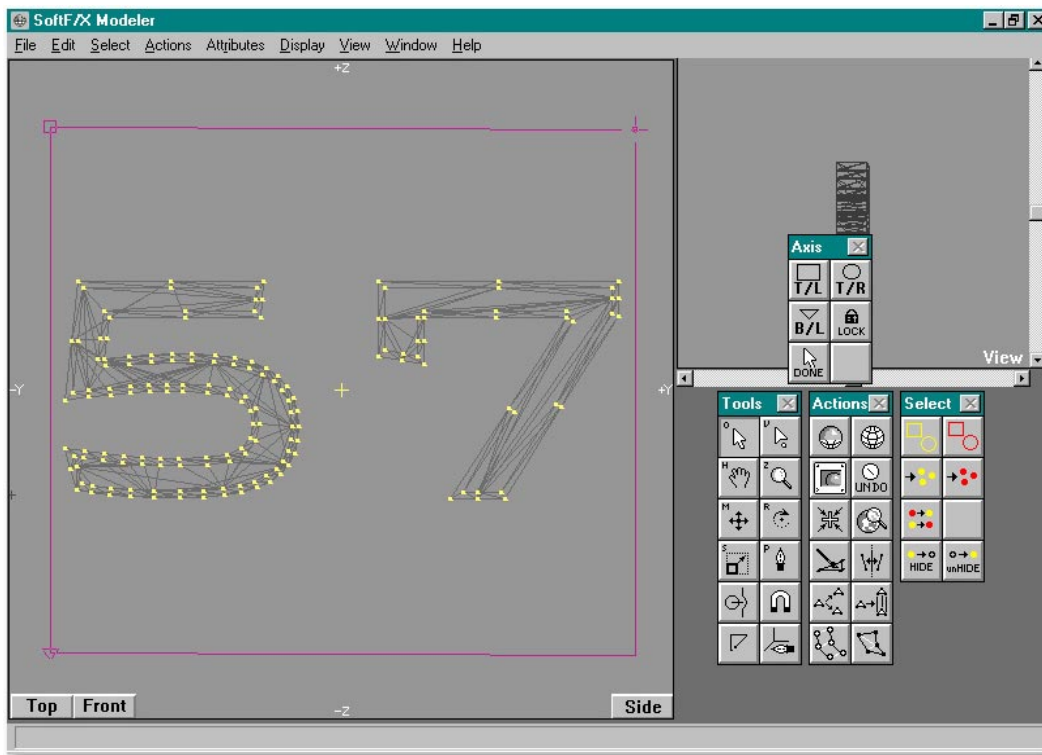


FIGURE 5.11 Reflection Map Axis placement

18. Right-click to leave Move Map Axis mode.
19. Left-click the **Done** button in the lower left of the dialog.
The Set Face Attributes dialog appears again.
20. Left-click the **Close** button in the lower right of the dialog.
21. Make a test rendering by left-clicking on the **Render** button in the Actions palette, then clicking the **Render** button in the Renderer dialog.
If you are not satisfied with the results, you can try going back and adjusting some of the settings you've made.
22. When you're finished, choose the **File-> Save As** menu item, and save the model as **57.SCE**
23. Return to the Animator by selecting the **Window-> Animator** menu item.



Render Icon

PLACE NEW ACTORS IN ANIMATION

1. Select the **Globe**. Left-Click on the **Snap Cursor to Actor** button.

This keeps the new Actor centered on the same point as the Globe.



Model Select Icon

2. Add a new Actor by pressing CTRL+A or selecting the **Edit-> Add Actor** menu item.

The Add Actor dialog appears.



Snap 3D Cursor to
Model Icon

3. Select the **Model** actor type, and change the model's name to **57**. Click **OK**

4. Select **57.SCE**, (or CH57.SCE, if you skipped the BUILD A MODEL section) and click **OK**.



Model Select Icon

5. Select the **57** actor. Select the **Edit-> Move** menu item

The Move To dialog appears.

6. Change the coordinates to:

- Left/Right: 0.03
- Back/Front: -3.39
- Up/Down: -0.125.

7. Select the **Channel-> Add Rotation Channel** menu item.

8. Set the Direction value to **-90**. Click **OK**.

This turns the 57 actor to face the camera.

9. Select the **Channel-> Add Scaling Channel** menu item.

10. Set all three values to **2.0**. Click **OK**. Left-click in the **Camera** view.

You should end up with an arrangement looking like Figure 5.12.

That Globe is starting to look a little plain. Let's dress it up a bit with some complementary models.

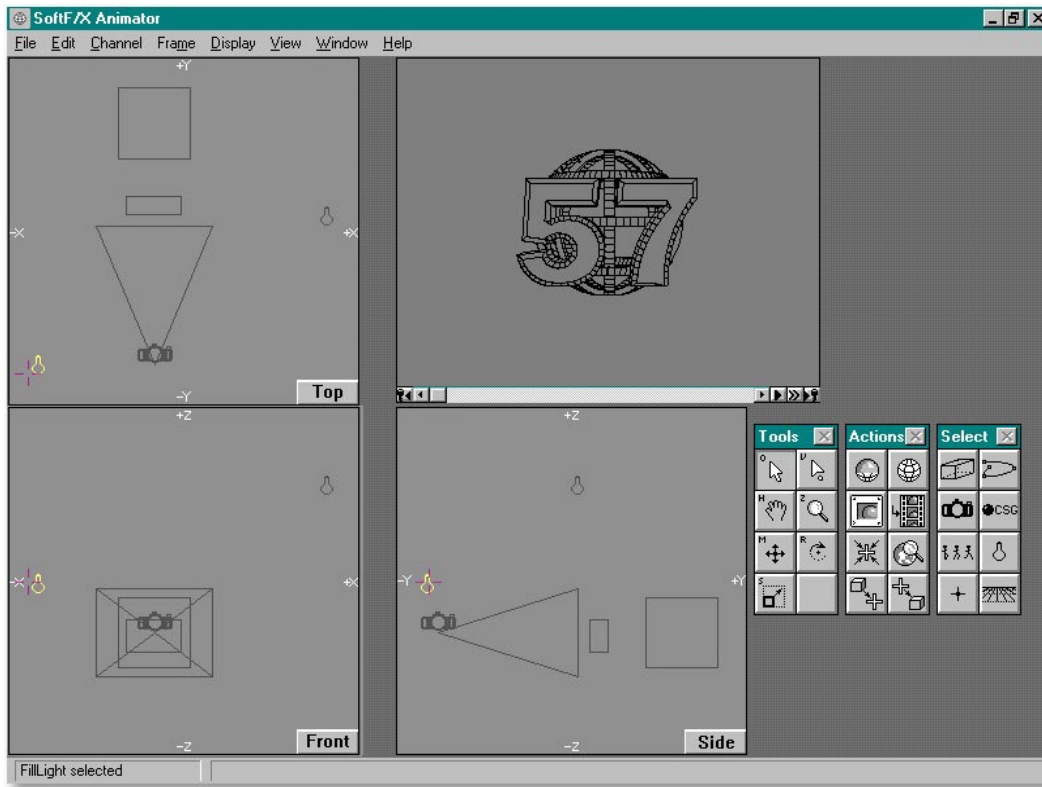


FIGURE 5.12 57.SCE Model movement, rotation, and scaling using Render Hidden Line button

11. Select the **Globe**. Left-Click on the **Snap Cursor to Actor** button.

This keeps the new Actor centered on the same point as the Globe.



Model Select Icon

12. Add a new Actor by pressing CTRL+A or selecting the **Edit-> Add Actor** menu item.

The Add Actor dialog appears.



Snap Cursor to Actor Icon

13. Select the **Model** actor type, and change the model's name to **Disk1**. Click **OK**

14. Select **DISK1.SCE**, and click **OK**.

15. Select the **Disk1** actor. Select the **Edit-> Move** menu item.



Model Select Icon

16. Change the **Up/Down** coordinate to **0.4**. Click **OK**.

17. Repeat steps 11 through 16 for Disk2 and Disk3, but leave Disk2 at **0.0**, and move Disk3 to **-0.4**. Be sure to re-Snap the cursor to the Globe before adding each new Actor.

The middle disk should probably be a little larger than the other two, just for esthetic balance.

18. Select the **Disk2** actor. Select the **Channel-> Add Scaling Channel** menu item.

19. Set the **Width** and **Length** values to **1.2**. Leave the **Height** value at **1.0**. Click **OK**.

You should end up with an arrangement looking like Figure 5.13

Looking good, so far. But no TV station will let it go with just putting up their channel number. They'll want to use it to introduce some of their regular, local programming—perhaps the nightly news. So let's add just one more model...



Model Select Icon

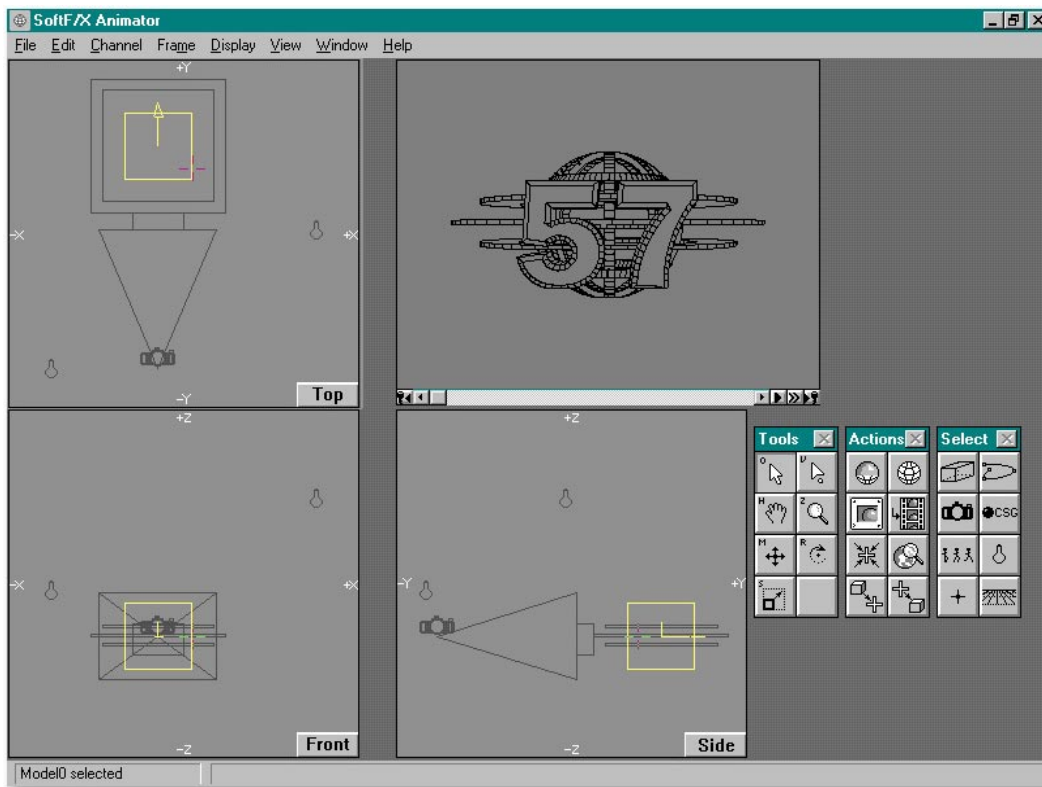


FIGURE 5.13 Example of proper scaling using Render Hidden Line button

20. Snap the cursor to the Globe again, and add a new Actor by pressing CTRL+A or selecting the **Edit-> Add Actor** menu item.



Snap 3D Cursor to Actor

The Add Actor dialog appears.

21. Select the **Model** actor type, and change the model's name to **NiteNews**. Click **OK**

22. Select **NITE-NEWS.SCE**, and click **OK**.

The NiteNews actor appears, centered on the Globe.

23. Select the **NiteNews** actor. Select the **Channel-> Add Rotation Channel** menu item.

24. Set the Direction value to **90**. Click **OK**.

NiteNews now faces the Camera. The basic setup of Actors is complete.

25. Make a test rendering by left-clicking on the **Render** button in the Actions palette, then clicking the **Render** button in the Renderer dialog. Leave all the defaults just as they are; these are acceptable for a quick test.

The Renderer generates a picture (Figure 5.14).



Model Select Icon



Render Icon



FIGURE 5.14 Channel 57 Nightly News Logo

ADD A BACKGROUND

The logo you've set up is nice, but still a little bland for television. Let's do something about that solid black background.

1. Select the **Edit-> Post Processes** menu item.

The Image Postprocessors dialog appears.

2. Left-click on the **Add** button. Choose **STARS.XFX** from the next dialog, and click **OK**.

The Starfield dialog appears. The Data File option produces a starfield as you would see it from Earth.

3. Left-click to select **Data in File**, and click **OK**, and again on **Close**.

4. Make a test rendering by left-clicking on the **Render** button in the Actions palette, then clicking the **Render** button in the Renderer dialog.

You see the same image as in Figure 5.14, but this time with a scattering of stars in the background.



Render Icon

ANIMATE THE SCENE

Station IDs are usually brief, about 5 seconds or so. At 30 frames per second for NTSC-standard video, that means 150 frames are needed. However, the demo animator is limited to 70 frames.

1. Select the **Frame-> Set Number Of...** menu item.

2. Set the number of frames to **70**, and click **OK**.

3. Press CTRL+F, or select the **Frame-> Go to...** menu item. Enter **70**, and click **OK**.

You can also do this by dragging the Camera view scroll box to the far right of the scroll bar

4. Select the **Globe** model. Choose the **Channel-> Add Rotation Channel** menu item.

The Rotation Channel dialog appears.



Model Select Icon

5. Set Internal Rotation, in the lower left corner of the dialog, to **vertical axis, clockwise**. Click **OK**.

This will make the Globe do a slow 360-degree spin during the 70 frames of the animation. Try left-clicking the Play Quick Draw button to see this. To modify Rotation Channel after it's added, use the Keyframer window and double-click in the Rotation Channel Keyframe at frame 70.

6. Select the **NiteNews** model. Go to Frame 40. Now we want to make the Nightly News model rotate, too; but not exactly the same way.

7. Select the **Channel-> Add Rotation Keyframe** menu item.

This adds a new rotation Keyframe for the NiteNews at frame 40, just one second before the end of the animation.

8. Go to Frame 1. Select the **Channel-> Add Rotation Keyframe** menu item.

This adds a new rotation Keyframe for the NiteNews at frame 1, right at the start of the animation.

9. Choose the **Edit-> Rotate** menu item.

The Set Rotation dialog appears.

10. Set the Direction value to **0**. Click **OK**.

This will make the NiteNews model do a slow 90-degree counterclockwise spin during the first 40 frames of the animation. The letters hold still for the last second of the animation. Try left-clicking the Play Quick Draw button to see this.

This animation is adequate for multimedia, where moving a Camera too much can produce very slow animation playback and sometimes even make it unacceptably jerky.

However, if you are rendering to some kind of analog or high-speed-digital video system, you can take advantage of the dramatic effects of camera movement without slowing down your playback.

MOVING THE CAMERA

1. Select the **Camera**. Go to Frame 70.

2. Choose the **Channel-> Add Rotation Channel** menu item.

The Rotation Channel dialog appears.

3. Left-click to select **Accelerated** rotation, in the top center of the dialog. Click **OK**.

4. Go to Frame 35. Choose the **Channel-> Add Rotation Keyframe** menu item. Do the same at Frame 1.

We want the Camera to be looking away from the Globe at the start, then turn to look at the Globe. The Accelerated rotation gives a more natural motion.

5. Go to Frame 1, if you are not already there. Choose the **Edit-> Rotate** menu item.

6. Set Direction to **31**, and Elevation to **-21**. Click **OK**.

The Camera will be looking down and to the left of the Globe to start. Try left-clicking the Play Quick Draw button to see this.

7. Press CTRL+K or choose the **Window-> Show Keyframer** menu item.



Camera Select Icon

8. You may have to use the scroll bars to find frame 70. Double-click on the **rotation keyframe** for the Camera in frame 70.
9. Reset the type of rotation from **Accelerated** to **Tween**. Click **OK**, then close the Keyframer.

This leaves frames 1 through 35 using Accelerated rotation, and frames 36 through 70 using Tween, which is better at holding a fixed position. This gets rid of the odd wobble you may have noticed. Try left-clicking the Play Quick Draw button to see this.

ZOOMING 57

Now for the finishing touch. Let's make the 57 zoom into the frame from behind the Camera.

1. Go to Frame 70. Select the 57.
2. Select the **Channel-> Add Movement Keyframe** menu item.
If the "add" menu item is gray, then there is already a keyframe at the frame number.
3. Repeat for Frame 1 and Frame 30. While you're there, add **Rotation** keyframes as well.

4. Go to frame 30. Select the **Camera**. Click the **Snap Cursor to Actor** button.



Camera Select Icon

5. Use the **Edit-> Select** menu item to select 57.

This leaves the cursor in position, snapped to the Camera.

6. Click the **Snap Actor to Cursor** button. Repeat for frame 1.



Snap Cursor to Actor Icon

57 is snapped to the Camera's position. The 57 will now be hidden behind the Camera until frame 30, when it will zoom past/around the Camera on its way to join the rest of the models.

7. Select the **Edit-> Rotate** menu item. Set 57's **Direction** rotation in frame 1 to -60, to match the angle of the Camera.

This keeps the corner of the 5 from appearing in frame 1 when rendered.



Snap Actor to Cursor Icon

8. Press CTRL+K or choose the **Window-> Show Keyframer** menu item.

9. You may have to use the scroll bars to find frame 70. Double-click on the **position keyframe** for the **57** in frame 70.

10. Reset the type of movement from **Spline Tween** to **Poly Tween**. Click **OK**, then close the Keyframer.

This leaves frames 1 through 30 using Spline Tween movement, and frames 31 through 70 using Poly Tween, which is better at holding a fixed position. This gets rid of the odd wobble you may have noticed. Try left-clicking the Play Quick Draw button to see this.

11. Render a hidden line animation to check your work. If all is satisfactory, render the full animation.



Render Hidden
Line Icon

OTHER OPTIONS

As an alternative to the Starfield effect, you can set up the STARS.GIF image as a Sky backdrop. The Backdrop will be locked to the Camera, so it will appear as if the Camera is fixed and the Globe and other models are 'flying' into the frame. This approach is sometimes easier than trying to coordinate the movements of a lot of Actors.

Appendices

APPENDIX I: THE SKY

To surround your scene with a sky effect, add a **Sky** actor using the **Edit-> Add Actor** menu item. A dialog will appear asking you to specify the appearance of the sky and its apparent effect on the scene (Figure A.1).

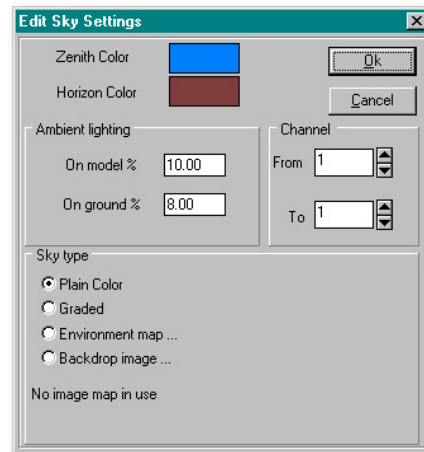


FIGURE A.1 Sky dialog

You can call up this dialog at any time by double-clicking the Sky's Costume keyframe in the Keyframer. The Sky requires only a Costume timeline.

Clicking either of the color patches calls up a color picker dialog.

APPENDIX 2: THE GROUND

You can add an infinite ground plane using the **Edit-> Add Actor** menu item. The **Edit Ground Settings** dialog prompts you to specify the Ground's appearance (Figure A.2).

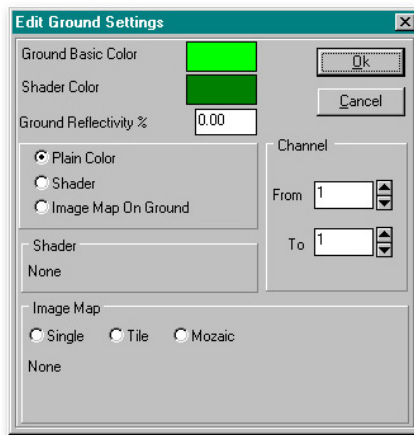


FIGURE A.2 *Ground dialog*

If a ground actor is present in the animation, you can invoke the same dialog two other ways:

- In the Keyframer, double-click the Costume keyframe for the Ground actor.
- In the Animator, double-click the Ground actor's select node (the small cube in the center of the Ground plane).

Scaling or rotating the ground plane does affect the textures applied to the Ground.

APPENDIX 3: ANIMATED GROUND PLANE

The ground can be made to take on the aspect of a dynamic fluid surface.

Call up the Edit Ground Settings dialog (as directed above), and click the button labeled "Shader". From the **Shader** menu, pick **Wave**, **Ripples**, or **Ocean**.

You control these effects by **Scaling** the ground's size rectangle, visible in the Animator when the Ground is selected.

- Wave textures are controlled as follows:
 - width controls wavelength
 - height controls wave height
- Ripple textures have an additional component:
 - width controls wavelength
 - height controls wave height
 - length controls dispersal of wave generators
- Ocean textures use the same parameters as Ripple, but produce broad swells surfaced

by complex ripple patterns.

Wave generation loops seamlessly every twenty frames. If you want your animation to appear continuous, make it a multiple of 20 frames in length.



FIGURE A.3 *Animated Ground Plane*

APPENDIX 4: TIMELINE COMMANDS

To add a timeline, left-click in the channel where you want the timeline to begin, then drag out the length of the line to the right. You'll be prompted for any additional information you may need to supply.

Double-click a keyframe, and depending on the type of timeline you selected, various of these commands will be available in the dialog:

- | | |
|----------|--|
| Delete: | Removes the timeline and leaves a gap. |
| Edit: | Takes you to a further dialog to perform additional editing operations. |
| Copy: | Makes an exact copy of a Costume timeline; places the copy to the right of the original. Useful when posing a Robot. Exclusive to Costume timelines.

Also, you can copy a Costume timeline by dragging over it with the left mouse button down. |
| Cut Out: | Similar to Delete. But instead of leaving a gap, it fills the empty space with the timelines to the right. |
| Cancel: | Dismisses the dialog without executing a command. |

Note: Camera Actors' Costume timelines cannot be edited.

Path Actors cannot have Rotation or Scaling timelines, as Paths cannot change Rotation or Scale during an animation.

Choosing Edit from the keyframe dialog will bring up a new set of commands specific to each type of timeline. Many commands are obvious, but some of the commands for Position and Rotation timelines may benefit from a brief explanation:

Position timeline commands:

- Poly-Tween: The actor will move in a straight line between the points specified at each keyframe.
- Follow: The actor will traverse the path selected in the ensuing dialog.
- Spline-Tween: The actor will move in a smooth curve (a spline) between points specified at keyframes. This has the effect of “rounding-off” the corners of Poly-Tweened motion.
- Follow-Off: The actor will follow (actually adhere to) the follow-point of another actor specified in the ensuing dialog. (An actor’s follow-point is set in the Modeler module.)
- Follow-On: The actor will follow the same line as the actor it is following, at the distance specified by the leading actor’s follow-point. Very effective for “train” type animations.
- Follow-At: The actor will slide, as though on rails, along a selected axis (or axes) to track another actor. You choose which axes will “lock on” the lead actor. Axes that aren’t locked can manipulated as usual.

Rotation timeline commands:

- Tween: The change in rotation from one keyframe to the next is “tweened” - changed continuously for the duration of the intervening timeline.
- To-Path: Applies to an actor traversing a path. The actor will orient to the path as it travels. For instance, an automobile will automatically point uphill, downhill, and around corners as it travels a winding road.
- Look-At: The actor will always point to another, specified actor (a dialog appears from which to select the pointed-to actor). This is one way to keep a Spotlight trained on a moving actor, for example.
- Mimic: The actor’s rotation exactly imitates that of another actor (specified in a dialog). Imagine a dance troupe, with all the performers pirouetting in synchronization.
- Accel: Same as Tween, but changes in rotation are accelerated and decelerated.

ated - “eased-in” and “eased-out” - automatically, to appear more natural. This is the rotational equivalent of a spline-tween.

Internals: An actor spins around one or more of its own (internal) axes. Dialogs prompt for axes and direction of rotation (clockwise or anti-clockwise). You can combine this operation with Tween, Accel, and To-Path (see above).

This is useful, for example, if you want a spinning ball to travel a winding path. The spin would be imparted by the Internals commands.

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