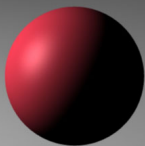


1

Bouncing Ball



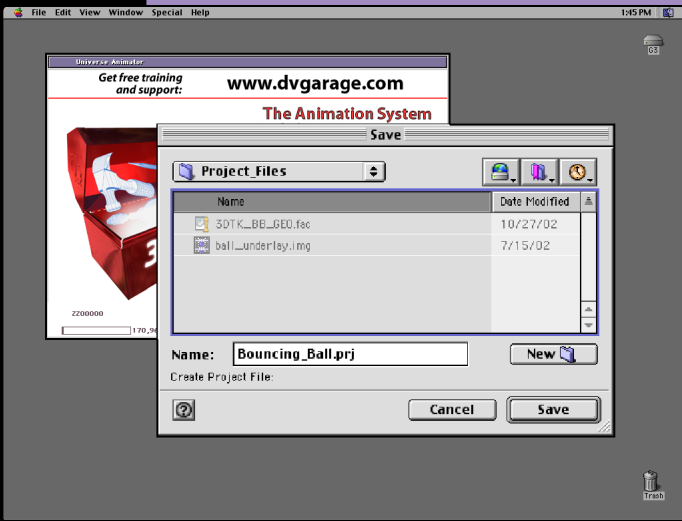
This tutorial is designed to introduce you to keyframing in the Electric Image Animation System. During this tutorial, you will build a bouncing ball animation that familiarizes you with activating keyframes, adding keyframes, working with the motion spline, and working in the time window. Along the way, you will also learn a little about inserting backgrounds and adjusting linkages.

There are some things to watch out for... In this tutorial, when asked to **[CLK+DRG]** the ball to create your keyframes, do not grab the ball at its center. This would move the keyframe itself, which is not what you want. Instead, grab the ball anywhere other than its center.



Overview





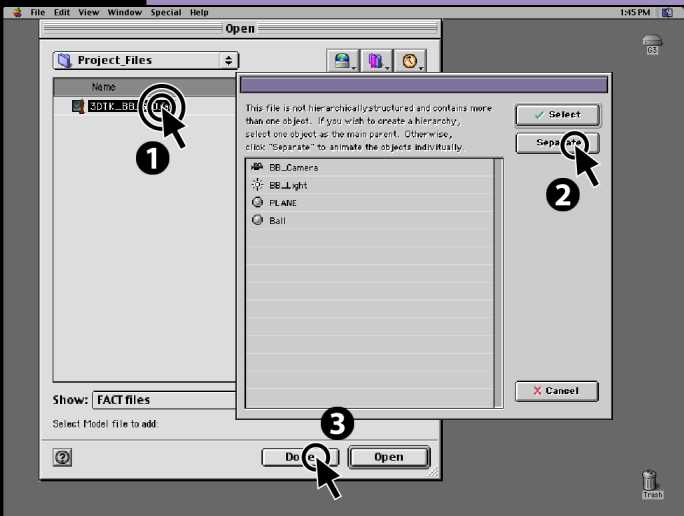
Launch Electric Image Animator.

Press [**CMD/CTRL+N**] to create a new project file.

When Electric Image prompts you to name and save this new project, name it "Bouncing_Ball.prj" file, then navigate to the Bouncing_Ball_Tutorial folder and save it in there.

Note: Macintosh keyboard commands are indicated in **red**. Windows keyboard commands are indicated in **blue**. Some files may need to be manually located while loading.





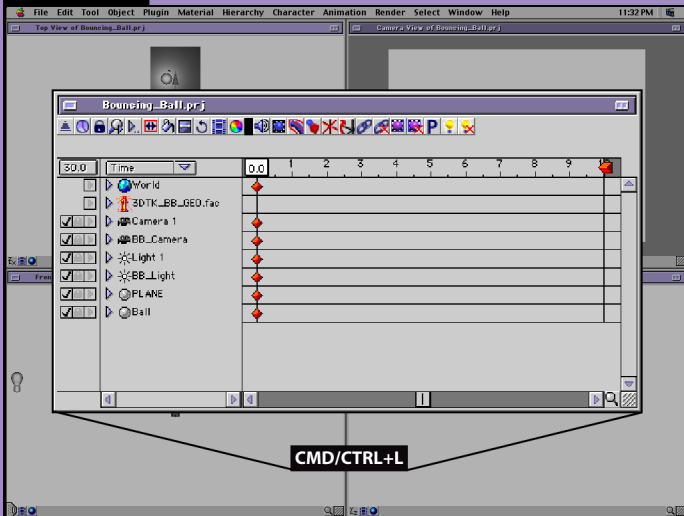
After saving, you will be prompted to load your FACT files into this new project.

Locate the 3DTK_BB_GEO.fac file and **[CLK]** Open.

You will then be asked to create a hierarchy of the objects contained in this FACT file. Since we want them separate, **[CLK]** the Separate button.

If there were any more models to add, you could continue adding them into the project, but for this exercise, there are no more models to add, so **[CLK]** the Done button.





Animator then generates the scene loosely based on the size of the FACT file we loaded.

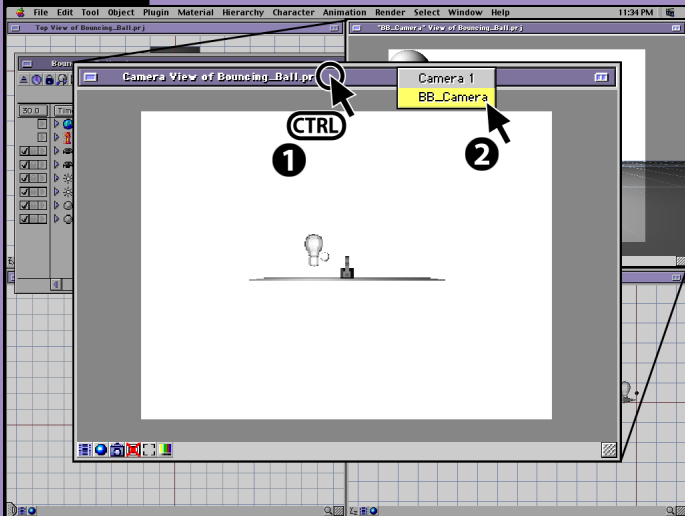
Before we proceed though, we need to remove two unwanted elements: a Camera and a Light.

Open the Project window, **[CMD/CTRL+L]**.

Animator defaults to adding a Light and a camera into every new Project file. Since our FACT file contained a prebuilt Camera and Light, we do not need the default Camera and Light in our scene.

However, before we delete the Camera, we need to switch our viewing angle from the default Camera to the BB_Camera...





In the Camera View window, [**CTRL/R+CLK**] on the Camera View window header bar.

In the pop-up menu, select BB_Camera.

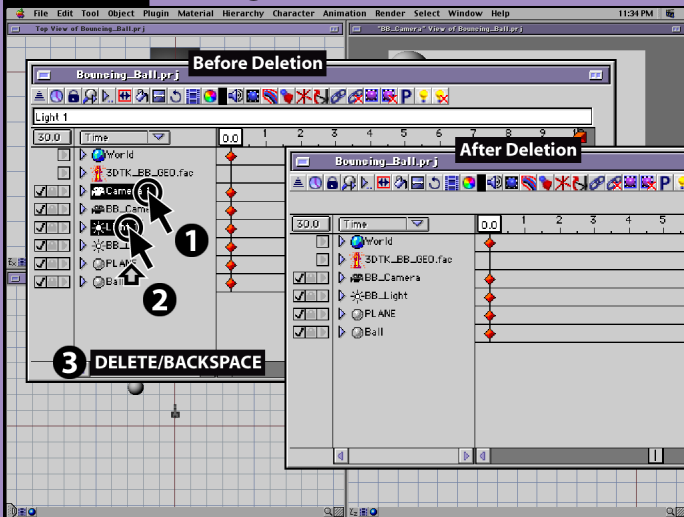
The Camera View window should now be looking at the set from a higher elevation.

Now we can delete the default Camera and Light....



6

Deleting the Default Camera and Light



So, in the Project window, **[CLK]** on Camera 1 and **[SHIFT+CLK]** on Light 1 then press the **[DELETE/BACKSPACE]** button.

You should only see the following in the Project window : World, 3DTK_BB_GEO.fac, BB_Camera, BB_Light, PLANE, and a Ball object.

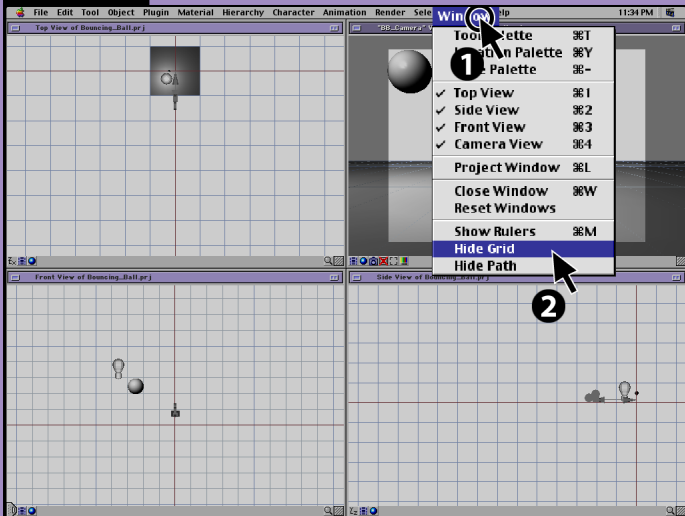
Press **[CMD/CTRL+W]** close the Project window.

Now on to the exercise....



7

Turning Off the Visible Grid



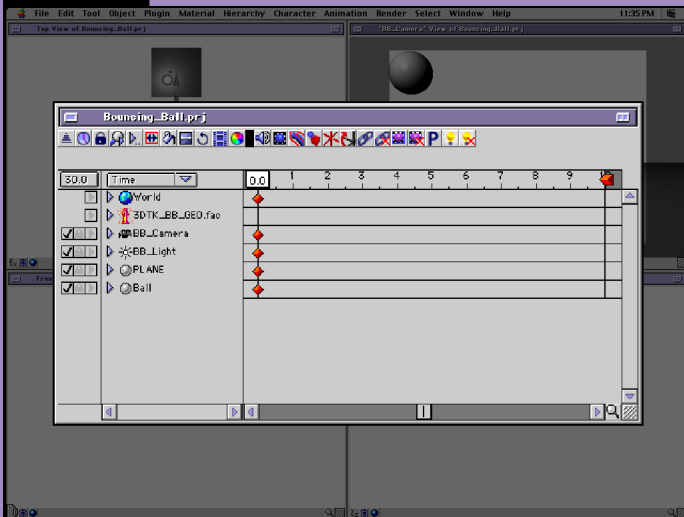
In the Main menu, select Window > Hide Grid.

Note: The visible grid should toggle off at this point.



Preparing the Animation



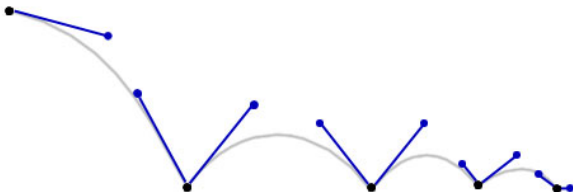


The Project window contains all of the objects in the scene. It is used to view keyframes and animation values over time. What really makes the Project window stand out is being able to convert the view of the Project window from a familiar video editing timeline layout to a powerful spreadsheet layout. This is unique in that you can set up functions to manipulate values for a very fine level of control.



9

Preparing the Animation

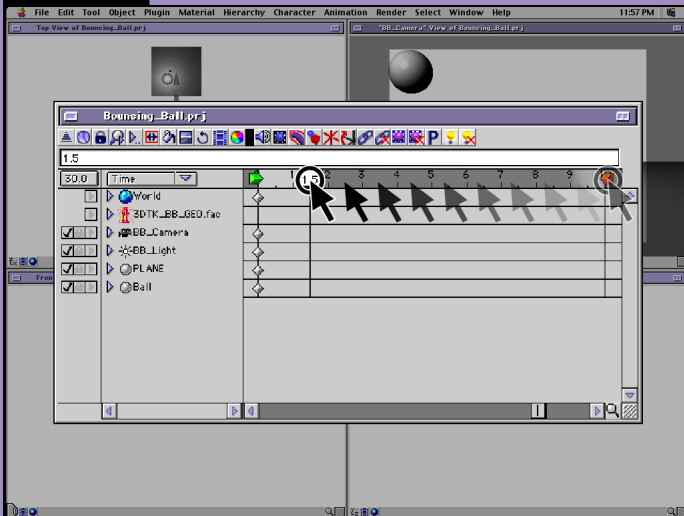


Before we begin the actual animation process, a few things need to be set up. We need to load in the underlay and constrain movement to the X/Y plane. Last, we need to tell EI which layers will get animated.



Overview



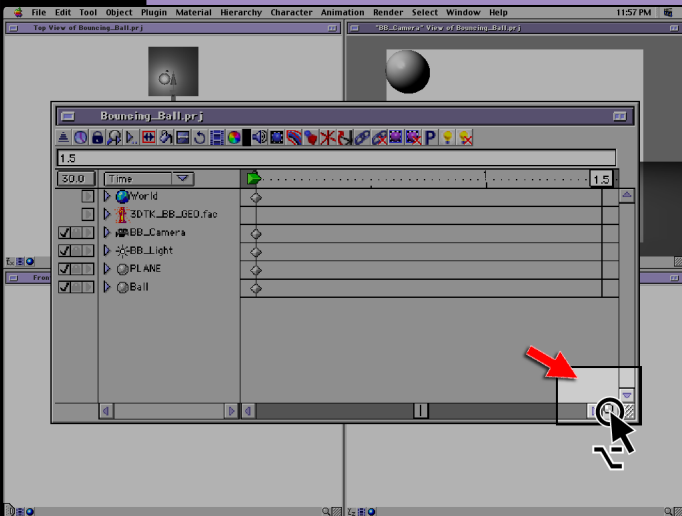


Open the Project window [**CMD/CTRL+L**].

[**CLK+DRG**] the red arrow to the 1.5 second mark.

Note: The red and green arrows at the top indicate the in and out points of the animation. When you move these arrows, the time indicator will snap to where you [**CLK+DRG**] these arrows. The full version of Universe 5 fixes this problem.

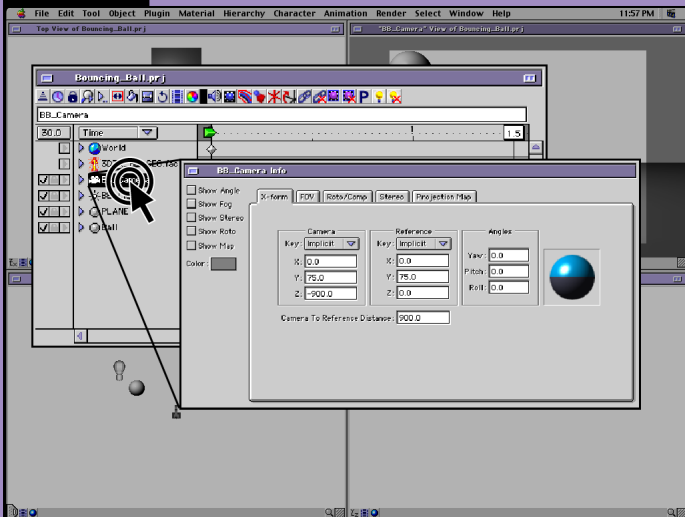




Still in the Project window, **[OPT/R+CLK]** the Zoom button (looks like a magnifying glass) on the bottom right of the window.

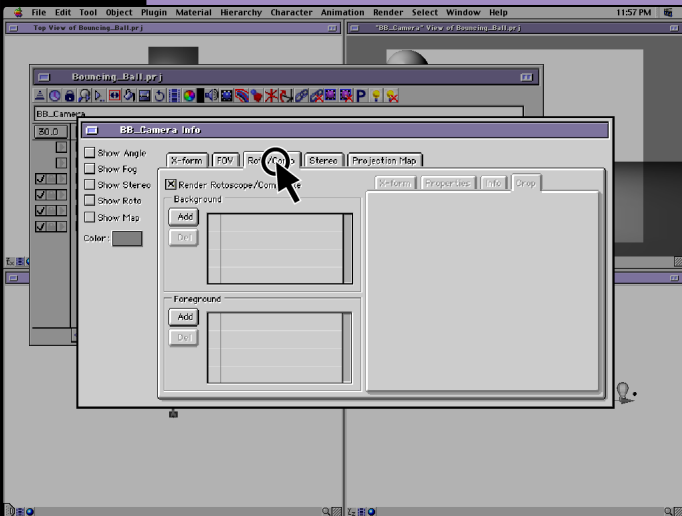
Note: **[OPT/R+CLK]** on the Zoom button will fit the scene in any window. You can interactively zoom in and out by either **[CLK+DRG]** to the left or right while pressing the Zoom button, too.





In the Project window, **[DBL+CLK]** the camera.

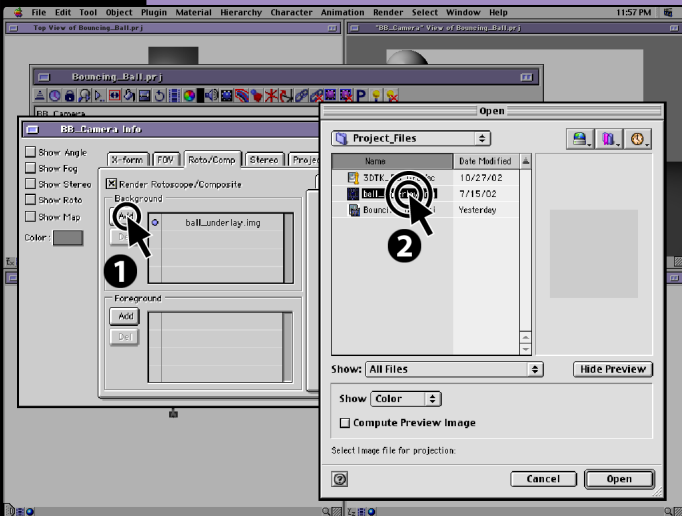




In the Camera Info window, **[CLK]** the Roto/Comp tab.

Note: The Roto/Comp tab allows you to import multiple still images and/or movies to help you align the 3D objects in your scene. You will notice that you have the option of placing the images/movies either in the foreground or background. The difference between Background and Foreground is this...when you apply an image or movie in the background section of the roto tab, the image or movie will play behind all of your objects in the Camera View window. When you add an image or movie to the foreground section, it will play in front of your objects. This is done this way for camera mapping images and/or movies onto geometry.



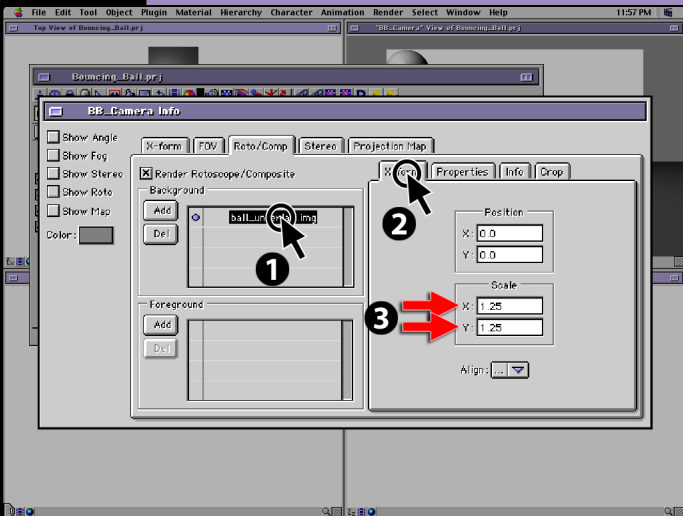


[CLK] the Add button in the Background section of the BB_Camera Info window.

In the Open dialog box, [DBL+CLK] the image Ball_Underlay.img to open the image.

Note: You can add either Stills or Movies to the Backgrounds and Foregrounds.





[CLK] on the underlay image in the Background Section of the dialog box.

[CLK] on the X-Form tab to the right of Background.

Enter 1.25 for both the X and Y Scale Values on the X-Form tab.

Note: Images added to the background are automatically scaled to the window. You can use these attributes to customize the position and scale.

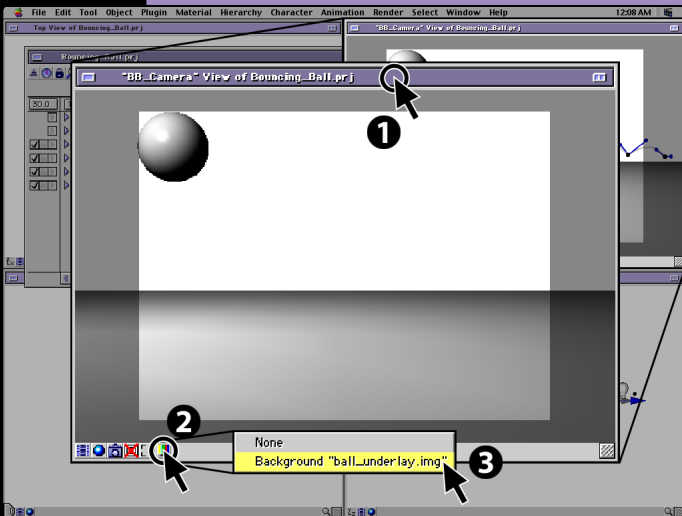




Make sure the Show Roto check box has an 'x' mark in it. If it does not, **[CLK]** on it.

To close the Camera Info window, **[CLK]** the button in the upper left-hand corner of the dialog box, or press **[CMD/CTRL+W]**.





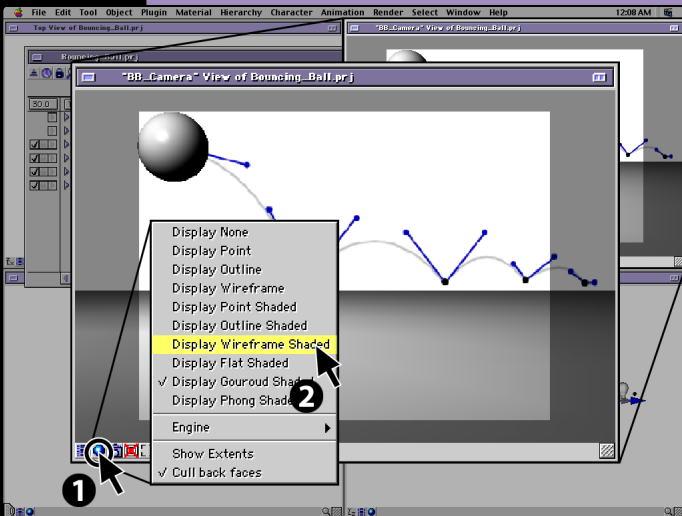
[CLK] the top menu bar of the Camera View window to bring it to the front.

[CLK] the Rotoscope button (which looks like a test pattern) in the bottom left area of the Camera View window.

Select the `ball_underlay.img` from the drop down menu.

Note: If you had more than one background or camera map, you would choose which image to display here.



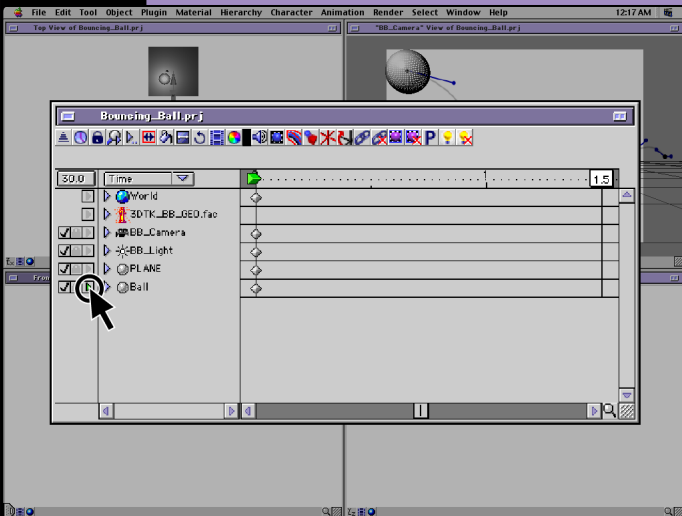


Since the ball obscures part of the underlay, let's look at the ball in a wireframe mode so that we can see where we will be positioning the ball on the underlay.

In the Camera View window, **[CLK]** on the Shade Mode button (the blue ball) and select Display Wireframe Shaded.

Note: If the underlay is showing as a black and white (negative) looking image in the Camera View window, **[CTRL/R+CLK]** the same test pattern button again and select RGB Only.

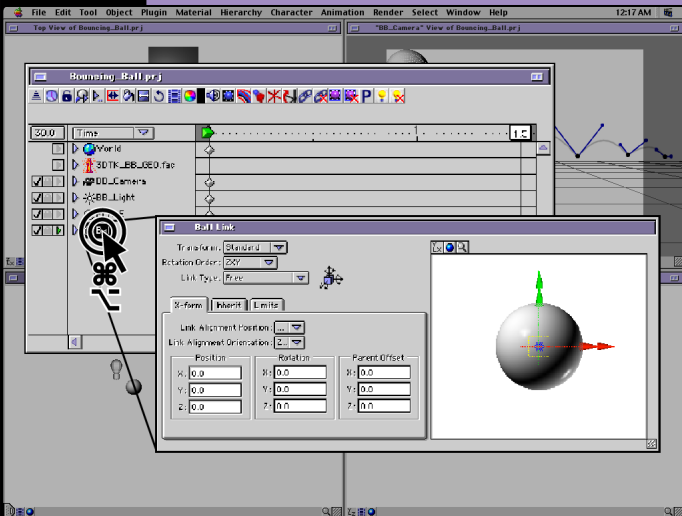




In the Project window, **[CLK]** the triangle to the left of the Ball object in the Project window so that it turns green.

Note: This green triangle must always be activated in order to animate an object in the Electric Image Animator.



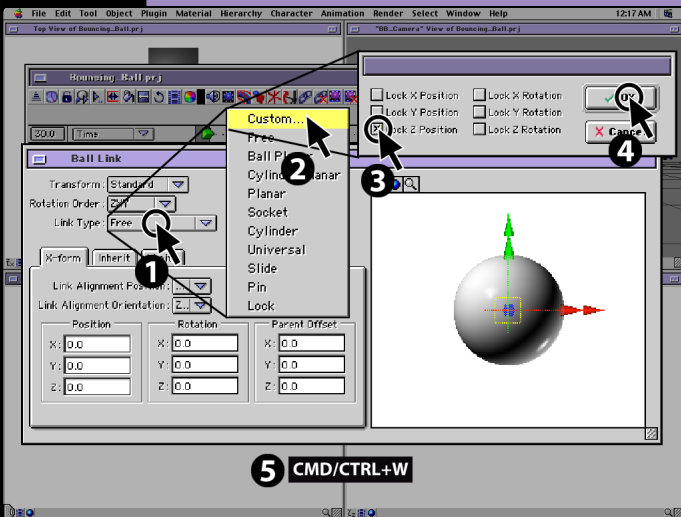


Still in the Project window, hold down **[CMD+OPT/CTRL+ALT]** and **[DBL+CLK]** the Ball object layer.

This will open the Link dialog box.

Note: The link is the origin of an object's position, rotation and scale.





5 CMD/CTRL+W

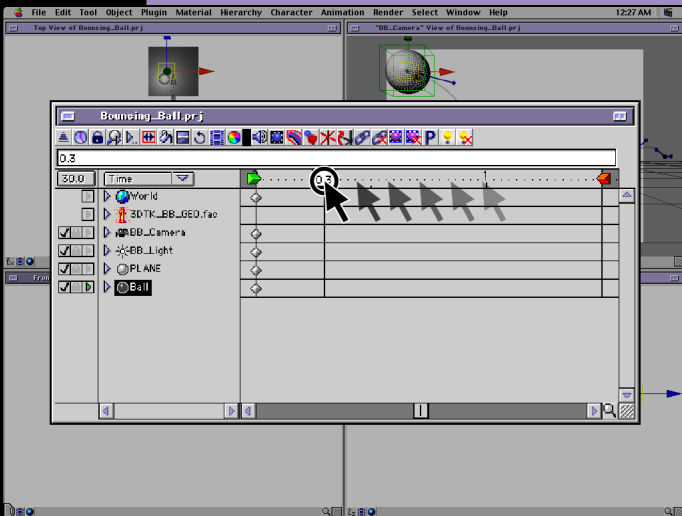
[CLK] the 'Free' button next to the Link Type to open up the pop-up menu, then select 'Custom.'

In the window that opens up, [CLK] the Lock Z Position check box.

[CLK] OK to close the dialog box.

Press [CMD/CTRL+W] or [CLK] in the upper left-hand corner of the Ball Link dialog to close it.

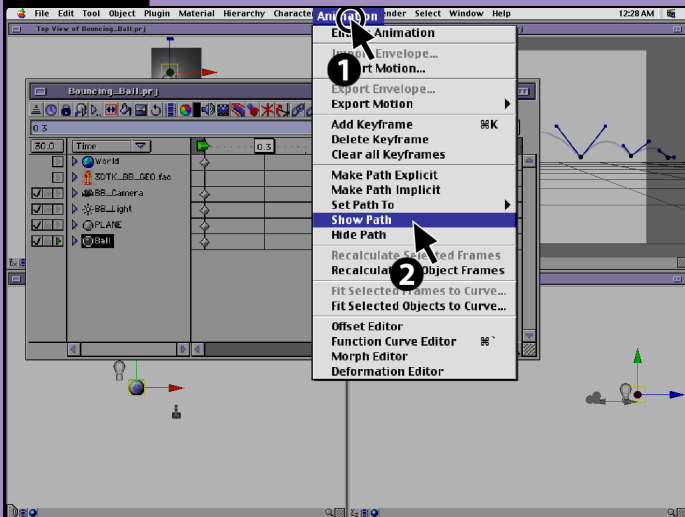




In the Project window, position the time slider to 0.3 seconds.

Note: The first keyframe is automatically placed at 0.0. With the animation activated, any changes will result in a new keyframe for that attribute at that time.

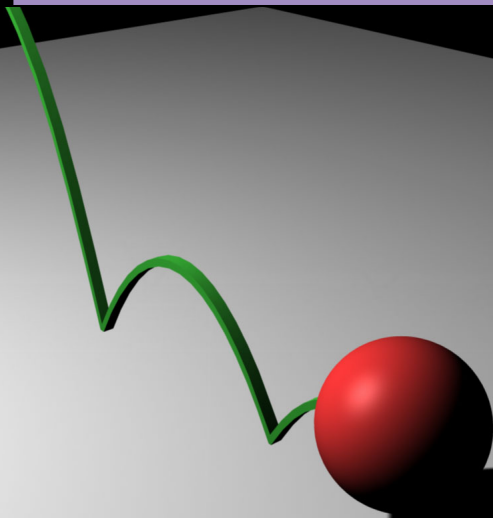




To make the motion paths visible, in the main menu, select **Animation > Show Path**.

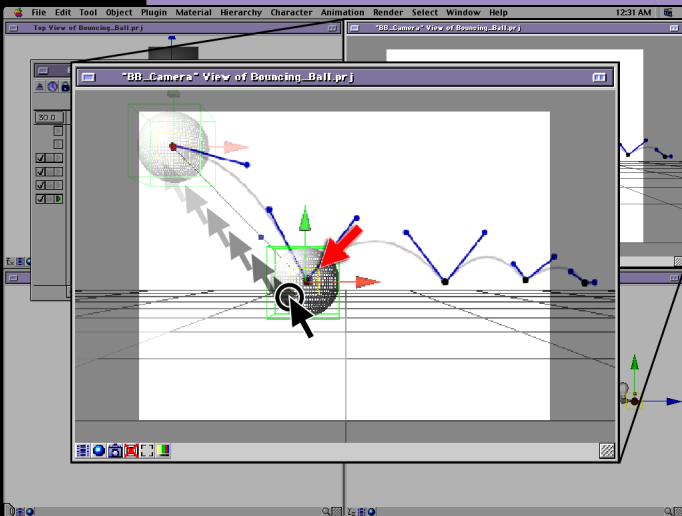
Note: This allows us to see the animation path as we animate the ball between keyframes. We will need to adjust this path to achieve a semi-realistic ball bounce.





Now that we have our timeline set up, we are ready to animate. Animation requires the creation of keyframes at specific points in time. Electric Image will interpolate or "tween" the frames in between our keyframes, creating smooth animation. A basic strategy to use when creating keyframes is to look for extremes of motion. In our case, we will be setting them when the ball contacts the ground. We can adjust and influence the tweens by various methods. In this lesson, we'll adjust the ball's motion by adjusting its motion path.



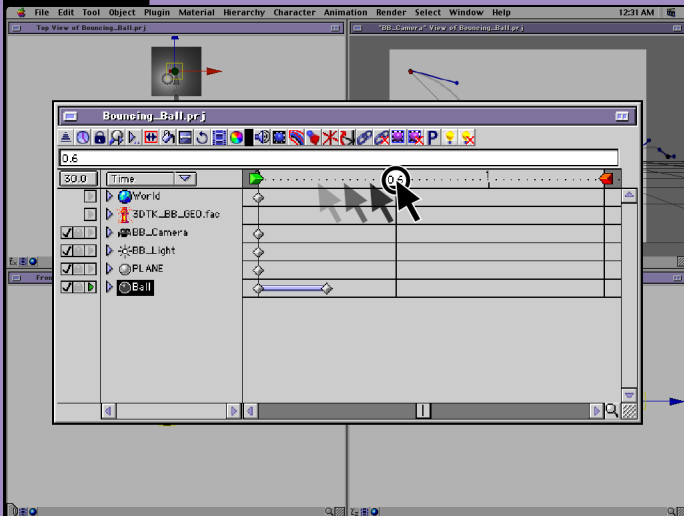


In the Camera View, **[CLK+DRG]** the ball* so that its center point lines up with the first bounce on the template.

*Important Note: You can grab the ball anywhere except its center point.

Note: When you move the ball to its new position, a gray line between the ball's initial position and the new keyframe marks the object's motion path.

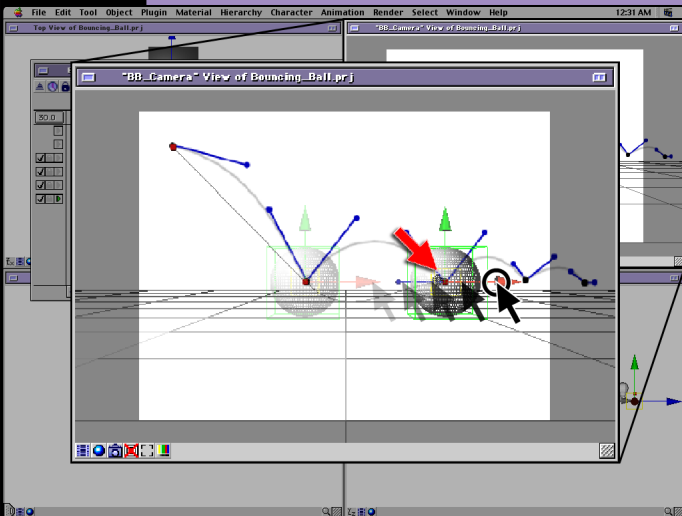




In the Project window, position the time slider to 0.6 seconds.

Note: Whenever you change any attribute of an object, a new keyframe will be generated for the current time.

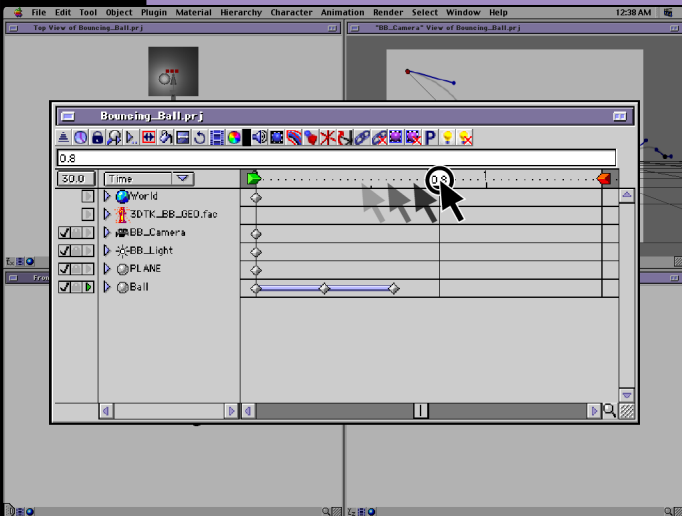




In the Camera View,, **[CLK+DRG]** on the ball's red constraint arrow to the right so that the ball's center point lines up with the second bounce on the template.

Note: You may notice the animation path that is developing and you may be tempted to adjust it. After we rough out the animation, we will go back and adjust the motion paths individually.

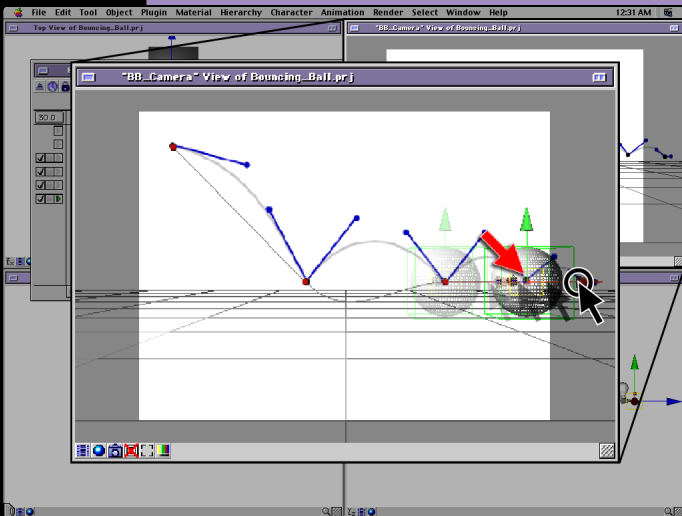




In the Project window, **[CLK+DRG]** the time slider to 0.8.

Note: Keyframes are only created for attributes that are changed.

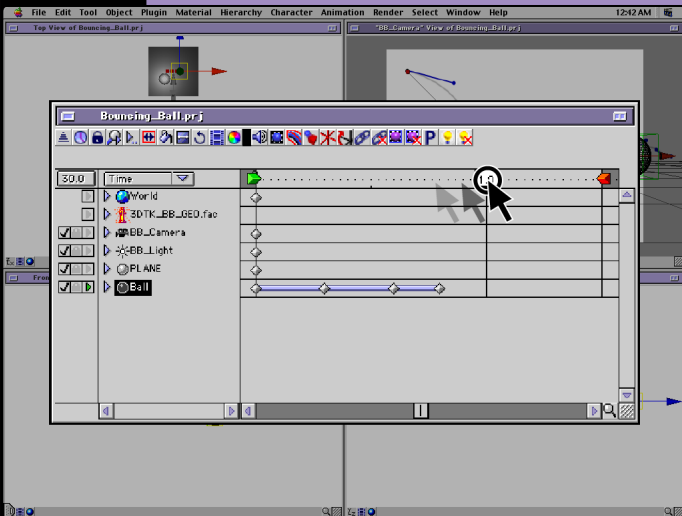




In the Camera View,, **[CLK+DRG]** on the ball's red constraint arrow so that its center point lines up with the third bounce on the template.

Note: By default, keyframes are interpolated as continuous bezier curves.

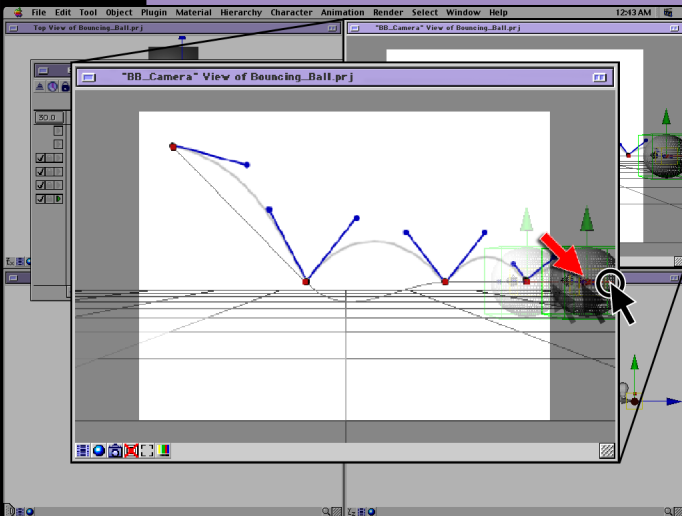




In the Project window, **[CLK+DRG]** the time slider to 1.0.

Note: You can change the placement of keyframes in the time window by simply dragging them.

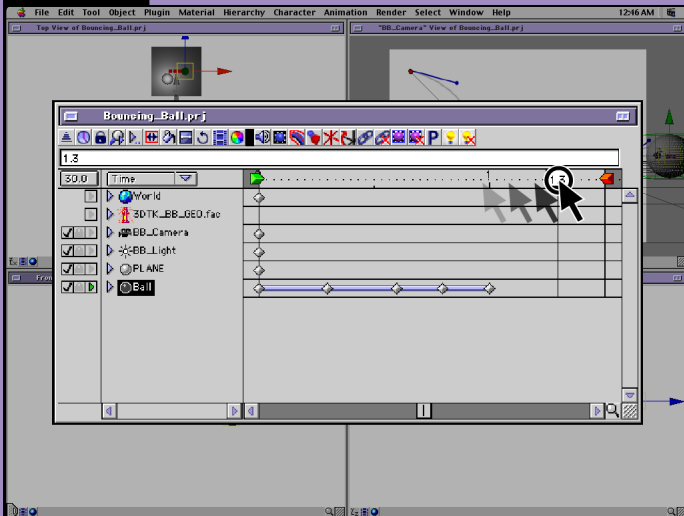




In the Camera View,, **[CLK+DRG]** on the ball's red constraint arrow so that its center point lines up with the fourth bounce on the template.

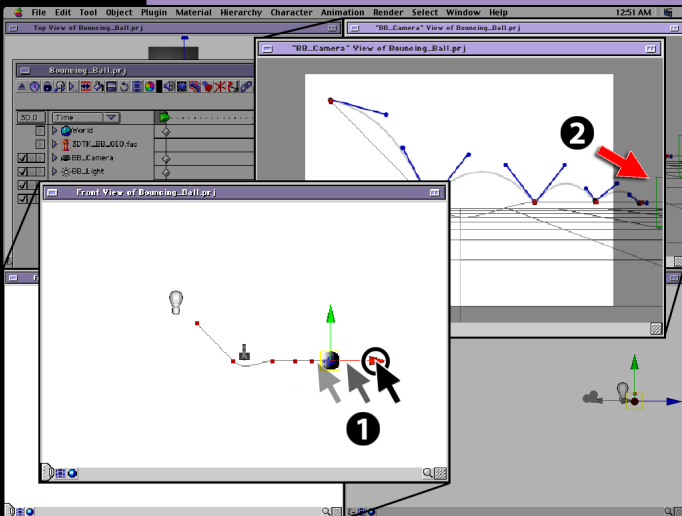
Note: You may need to move the ball in the Front View window instead of the Camera View window. As you move the ball, watch the positioning of it in the Camera View window.





In the Project window, **[CLK+DRG]** the time slider to 1.3 seconds.



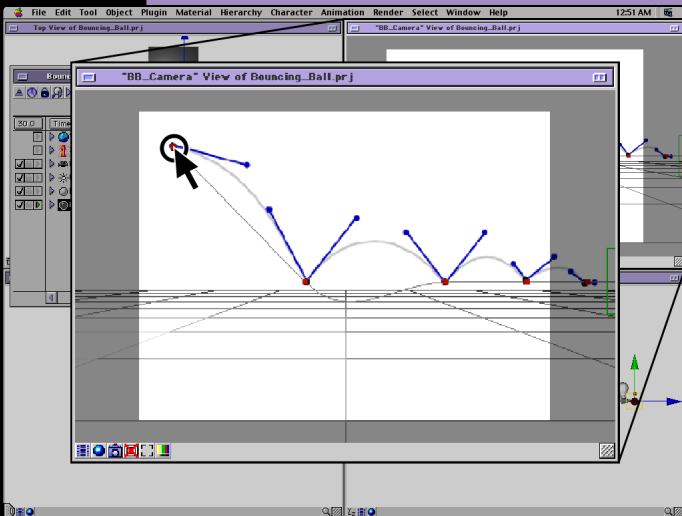


We are going to move the ball further off screen, but to do that, we will have to move the ball in the Front View window as we watch the positioning of it in the Camera View window.

In the Front View window, **[CLK+DRG]** the ball's red constraint arrow and move it farther to right until you can't see it at all in the Camera View window.

Note: Moving an object in any window will affect all the windows and animation data.

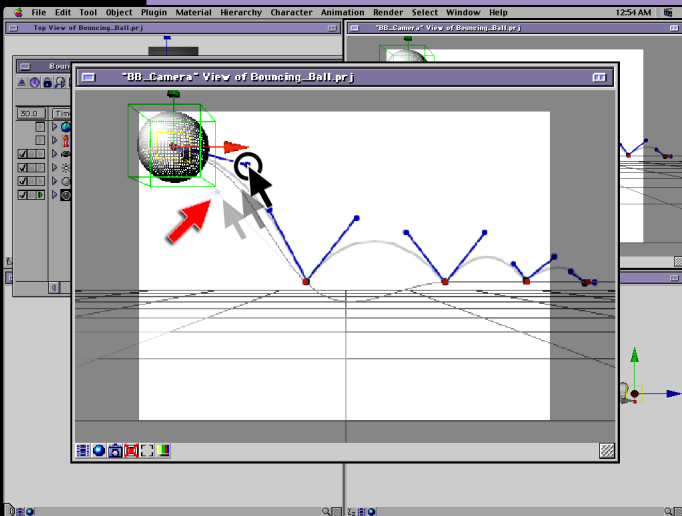




In the Camera View, **[CLK]** on the first point (red dot) on the motion path.

Note: These points, or red dots, are keyframes. When you click on an existing keyframe, the time marker in the Project window automatically snaps to that point in time.

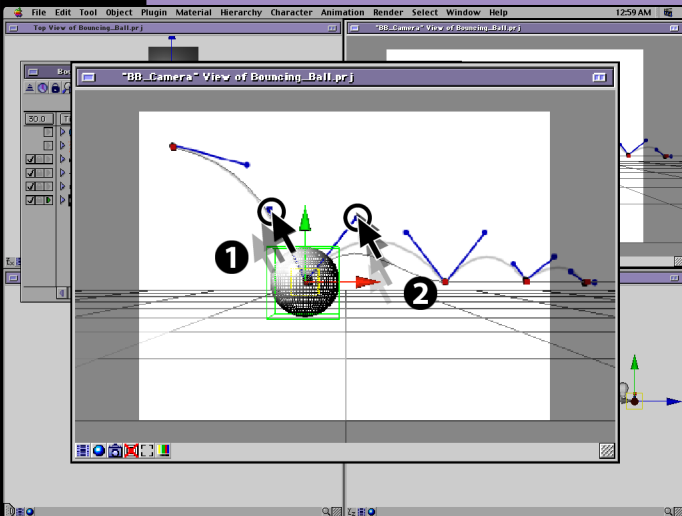




In the Camera View window, **[CLK+DRG]** the blue handle that appears so that it lines up with the template.

Note: By adjusting the handles, you can define how Electric Image interpolates between keyframes.



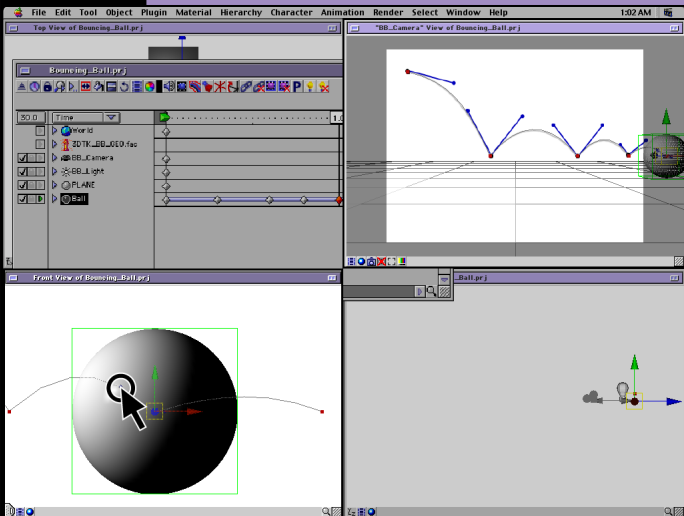


In the Camera View window, **[CLK]** on the second keyframe dot.

Hold down **[CMD+OPT/CTRL+ALT]** and **[CLK+DRG]** each handle on the second key frame to line up with the template.

Note: Holding down **[CMD+OPT/CTRL+ALT]** and dragging breaks the continuity between bezier curves, while holding down just **[CMD/CTRL]** and dragging will restore continuity.



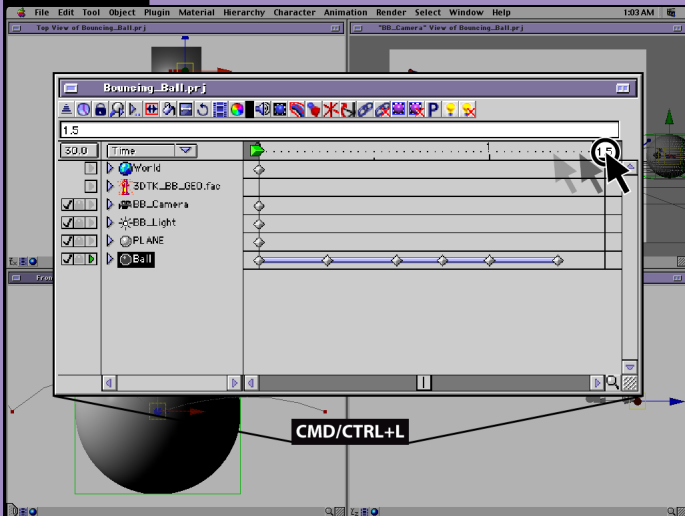


[CLK] on the next keyframe and reshape the handles according to the underlay.

Repeat this process for the rest of the keyframes.

Note: You may need to use the Top or Front View window to grab the bezier handles for positioning the last keyframe position.





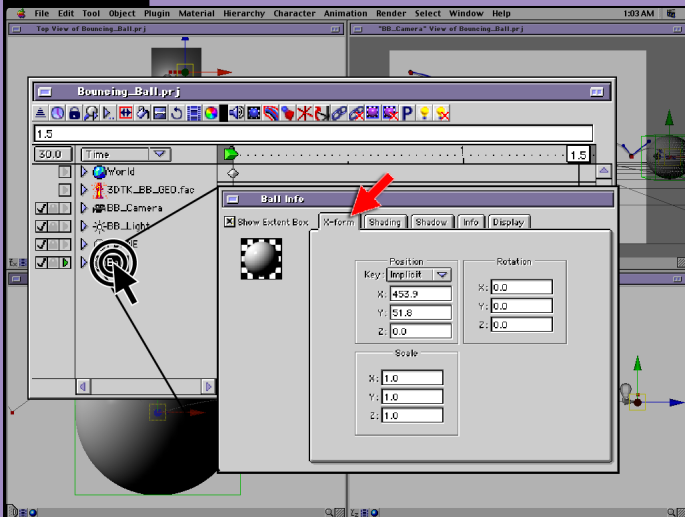
Press [**CMD/CTRL+L**] to display the Project window, or just [**CLK**] the Project window to bring it to the foreground.

[**CLK+DRG**] the time slider to the end of the animation.

Hint: You can use the info box to numerically adjust the values of many object attributes.

Next, we are going to add some rotation to the ball...

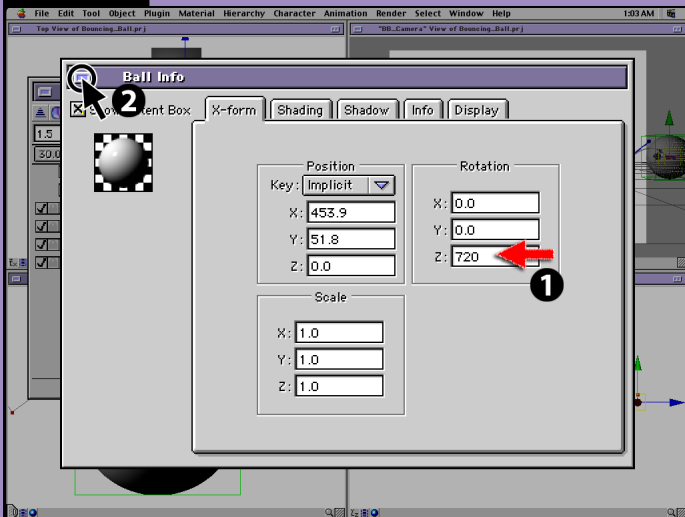




[DBL+CLK] the Ball in the Project window to bring up its parameters.

Make sure that the X-Form tab is showing.



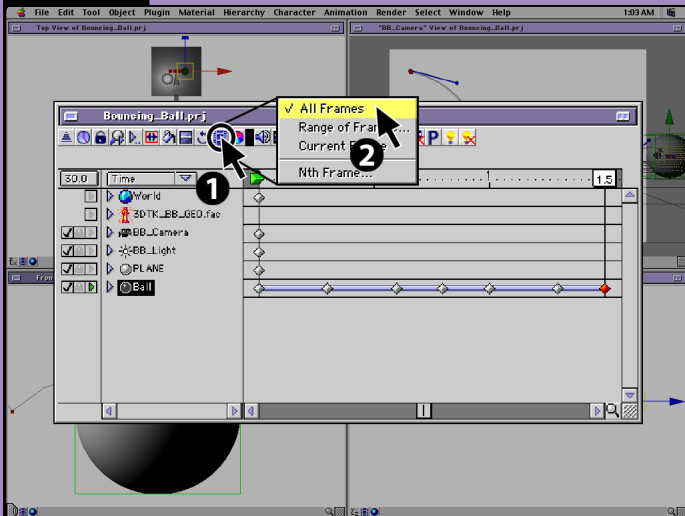


Enter +720 for the Rotation value on the Z-axis.

[CLK] in the upper left-hand corner to close the window, or press [CMD/CTRL+W].

Note: While we set multiple keyframes for the position, we only need two keyframes to define a smooth rotation of two revolutions: one at the beginning and one at the end.

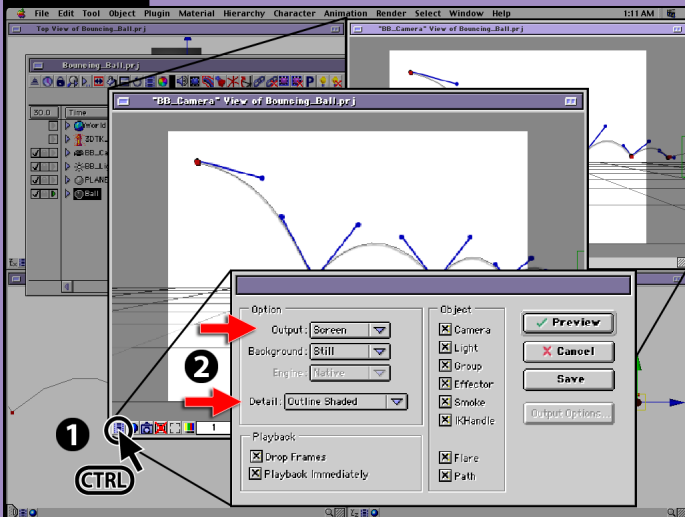




In the Project window, **[CLK]** the Render Range button (which looks like a film strip, 10th button from the left) and in the drop-down menu select "All Frames".

Note: This often defaults to Single frame which will result in nothing moving during a preview.





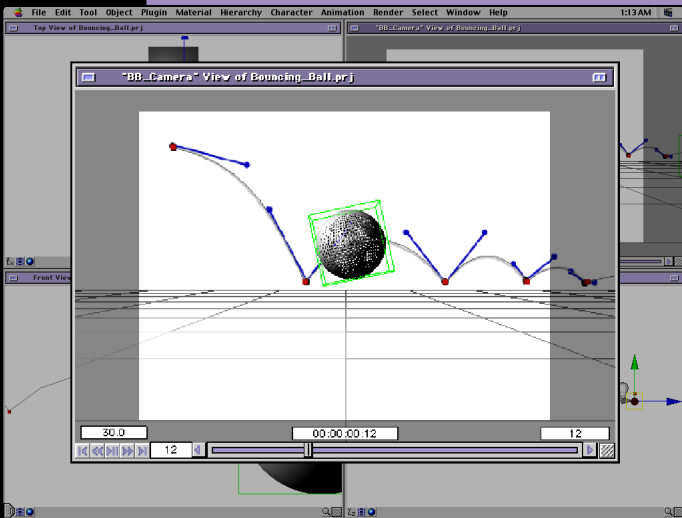
In the Camera View window, **[CTRL/R+CLK]** the Preview button (which looks like a flimstrip).

In the Output drop down menu, select Screen.

In the Detail drop-down menu, select Outline Shaded.

Note: The more detail you include, the longer it will take to compute. Faster computers and better display cards can preview Phong shaded models.





[CLK] the Preview button.

Note: After preferences have been set, you can simply preview your animation with a [CLK] of the Preview button in the Camera window.

