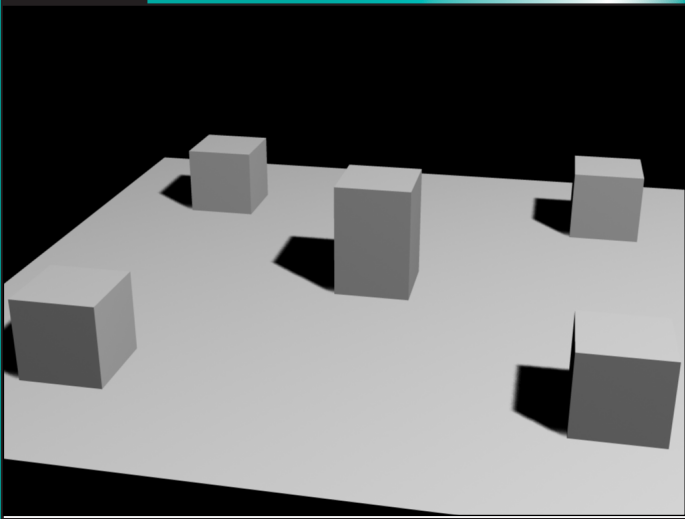


# 1

## Shadows...



Shadows are important elements in achieving a believable quality to your scene.

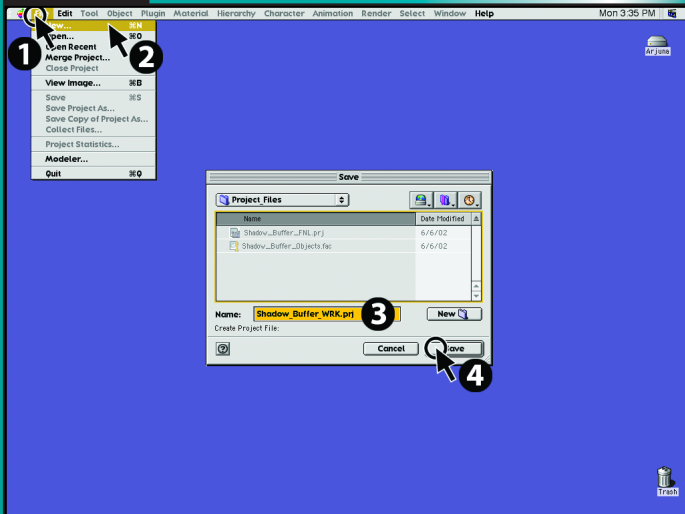
In Animator, they are controlled through the use of Shadow Buffers.

Shadow Buffers are a way to cheat the effect of a shadow in the real world without doing the real calculations. In many cases, they look better than ray-traced shadows and are close enough to the real thing for most jobs.



# 2

## Getting Started



Launch Animator.

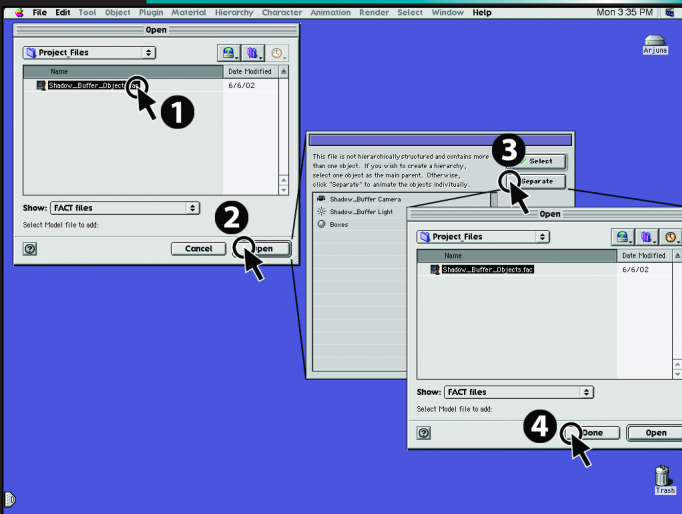
Press [**CMD/CTRL+N**] to start a new project.

When Animator prompts you to name and save this new project, name it "Shadow\_Buffer\_WRK.prj" file, then navigate to the Shadow\_Buffer\_Tutorial folder and save it in there.



### Lighting Tutorial: Shadow Buffer





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

Locate the Shadow\_Buffer\_Objects.fac file and **[CLK]** Open.

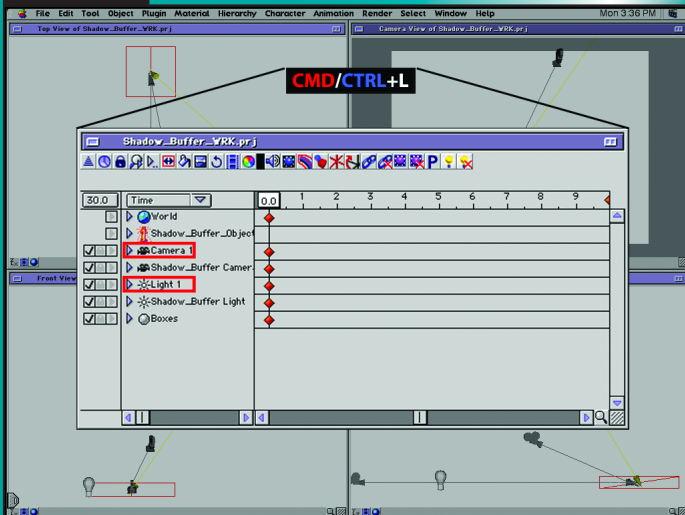
You will then be asked to create a hierarchy of the objects contained in this FACT file. Since we want them separate, **[CLK]** the Separate button.

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.



## 4

## Removing Unnecessary Objects



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

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

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

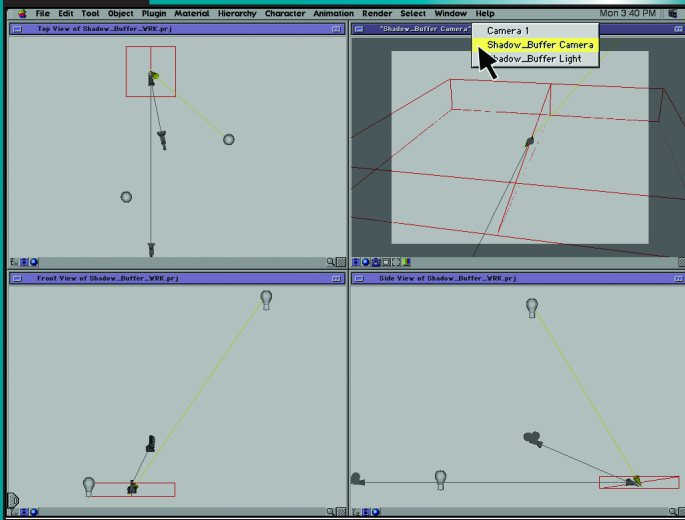
Animator defaults to adding a Light and a Camera into every new Project file. Since our FACT file contained a prebuilt Camera and Light, we do not need the default Camera and Light in our scene.

But before we delete the Camera, we need to switch our viewing angle from the default Camera to the Shadow Buffer Camera...



# 5

## Switching the Camera View



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

In the pop-up menu, select **Shadow\_Buffer Camera**.

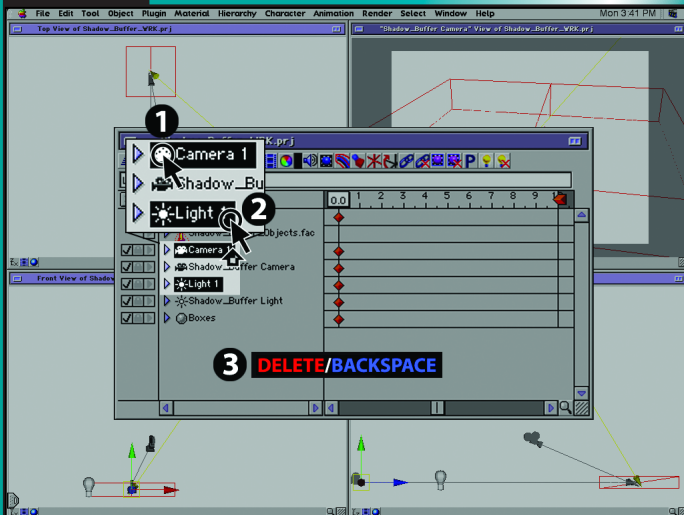
The Camera View window should now be looking at the set from a higher elevation.

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



## 6

## Deleting the Default Camera and Light

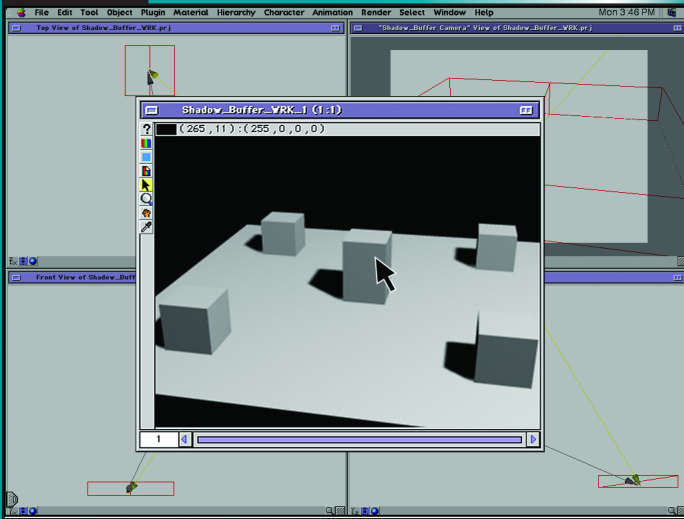


So, in the Project window, **[CLK]** on Camera 1, **[SHIFT+CLK]** on Light 1, then press the **[DELETE/BACKSPACE]** button.

You should only see the following in the Project window : World, Shadow\_Buffer\_Objects.fac, Shadow\_Buffer Camera, Shadow Buffer Light, and Boxes.

Now, on to the exercise....





In the lower left of the Camera View window, **[CLK]** on the Snapshot button and select "Window Size".

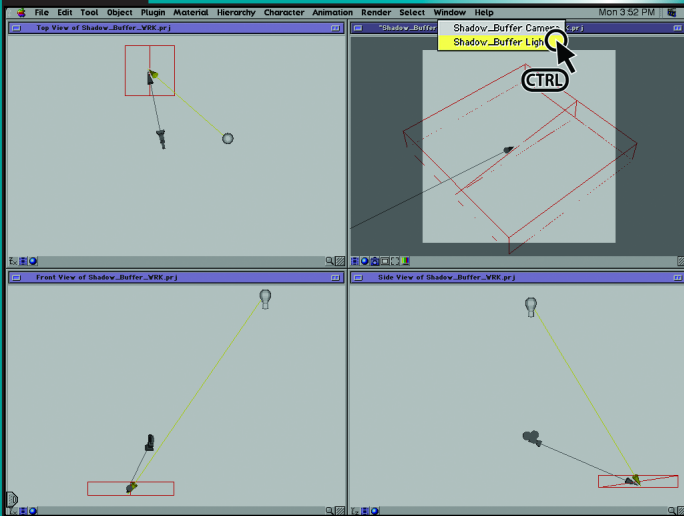
It's a fairly simple scene - a ground plane with 5 boxes on top of it. The Light that is illuminating the scene is set to cast shadows, so that is why we see shadows.

Now position this rendered window on top of the Side View window... we will be comparing all future renders with this window, paying very careful attention to the shadows...



## 8

## Change the View



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

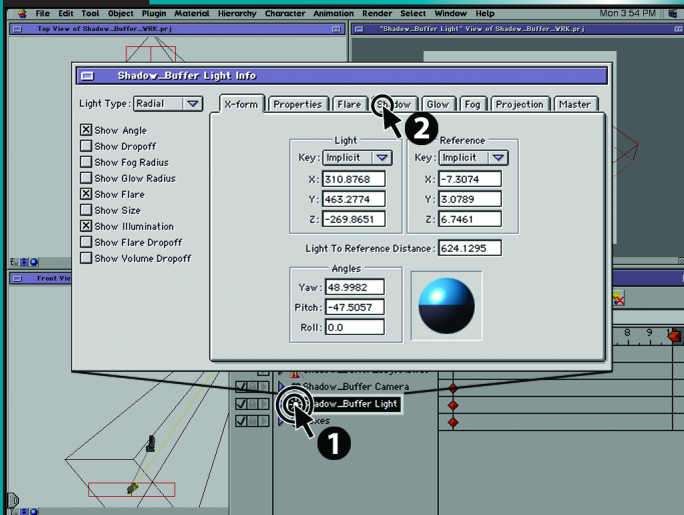
In the pop-up menu, select Shadow\_Buffer Light.

We are now looking at the scene through the light source (this is very handy when aiming lights). Besides seeing what the light source is illuminating, we can observe how the shadow buffer is interacting with the scene.

Here, let's show you what we mean...







In the Project window, **[DBL+CLK]** on the Shadow\_Buffer Light.

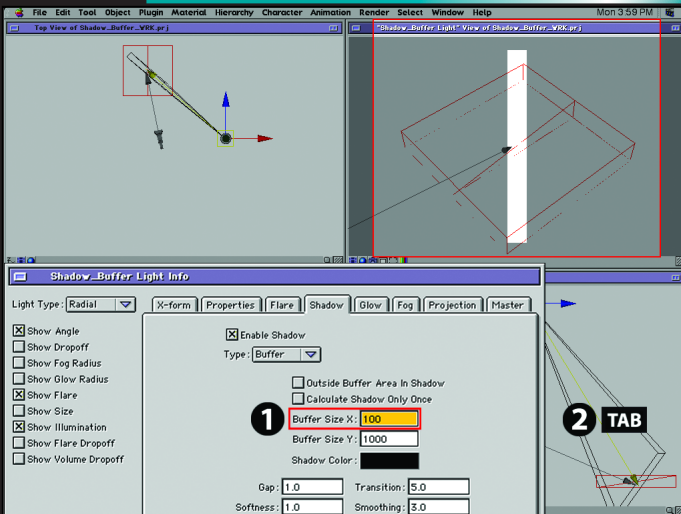
In the Shadow\_Buffer Light Info window, **[CLK]** on the Shadow tab.

What we are about to do is change the Buffer Size of the Shadow. The Shadow is just a texture map and the Buffer Size is the resolution of the shadow texture map.



# 10

## Changing the Buffer Size: X value



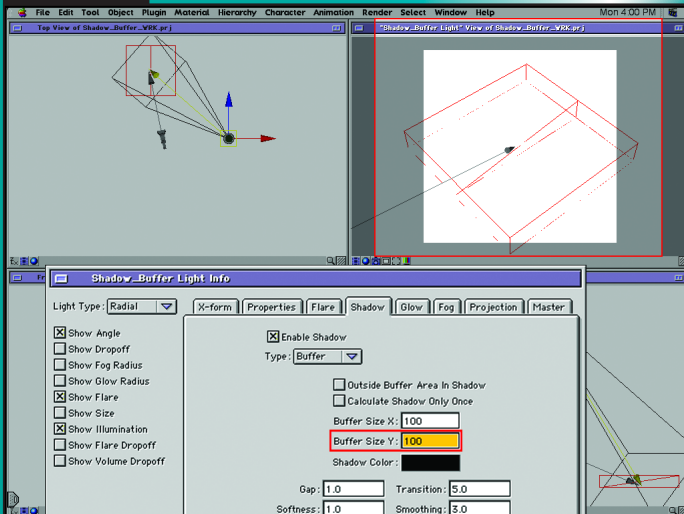
In the Shadow tab, find the value box next to Buffer Size X, enter 100, then press the **[TAB]** key (or press the **[ENTER]** Key on the numeric keypad).

Pay attention to the shaded window in the Camera View window (which is now called Shadow\_Buffer Light View).

Entering 100 in the X value made the window a narrow slit.  
100 units wide and 1000 units tall...

Changing this resolution reduces the total pixels from 1,000,000 (1000 times 1000)...to 100,000 (100 times 1000)...10 times smaller and much faster to render...but does everything fit? We'll be coming back to this.





Now, in the Buffer Size Y value box, enter 100.

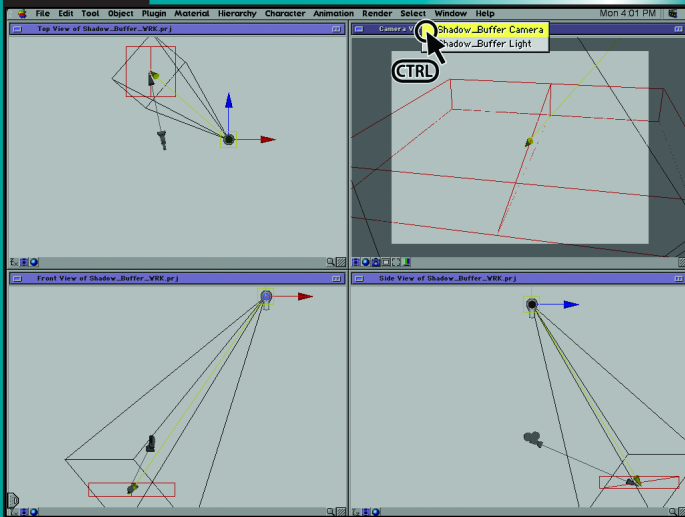
Notice the window went back to "normal": a square. Or did it?

Let's render out another snapshot, but before we do, we need to change the viewing angle in the Camera window back to Camera.



# 12

## Change the View



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

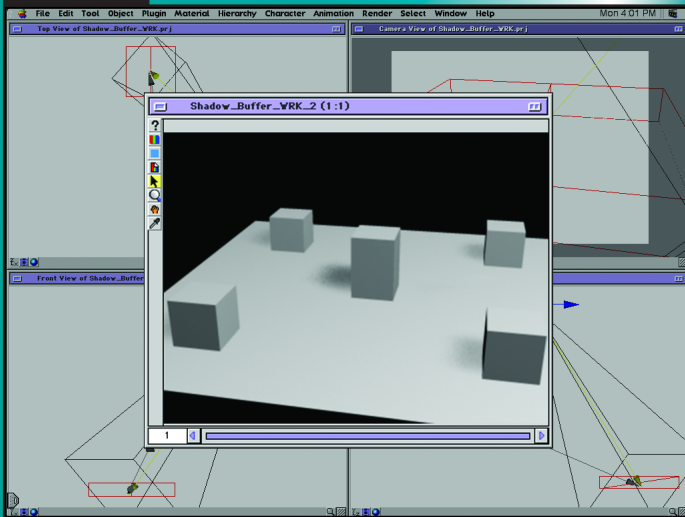
In the pop-up menu, select Shadow\_Buffer Camera (get used to this, we will be doing this quite often).

You should now be viewing through the Camera View window (you can tell by the name on the Window menu bar).



# 13

## Render a Snapshot



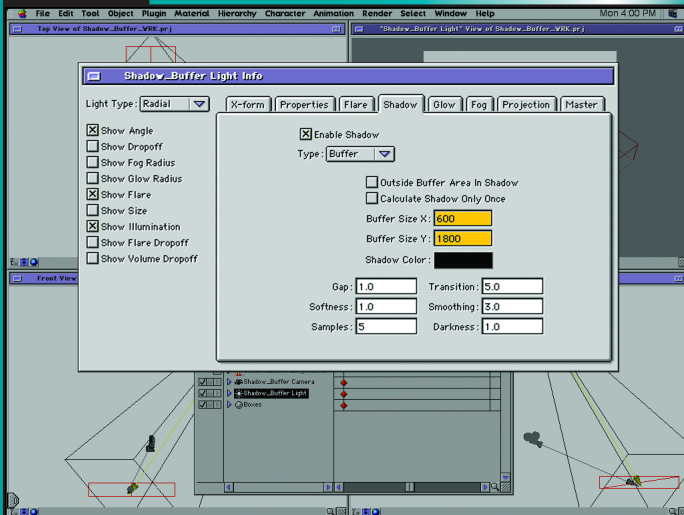
In the lower left of the Camera View Window, **[CLK]** on the Snapshot button and select "Window Size".

After it's done rendering, compare this render to the first render.

Notice the Shadow patterns - the resolution is now very different than before.

You created a much smaller image to represent the shadow... this has been stretched too far, resulting in the softening you see here.





We just showed you a square shadow buffer. You can also have non-square shadow buffers. Why non-square?

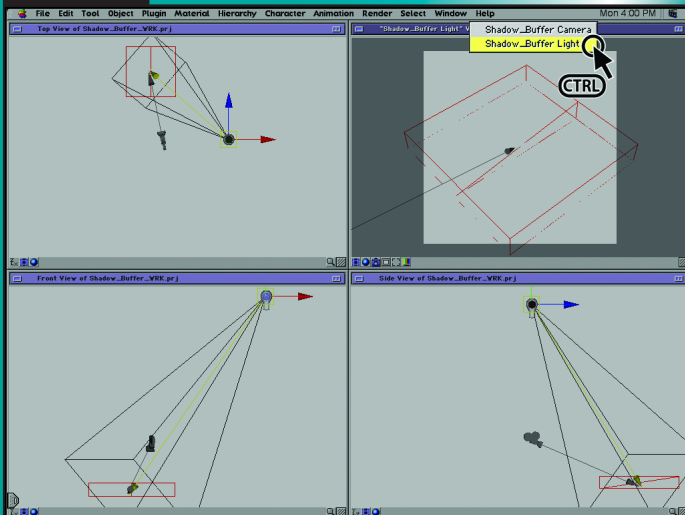
You may find that a scene is very long but not high...like a canyon. By narrowing the resolution, you can focus all your resolution where you need it.

Here, to show you what we mean, let's try a non-square shadow buffer setting...



# 15

## Change the View



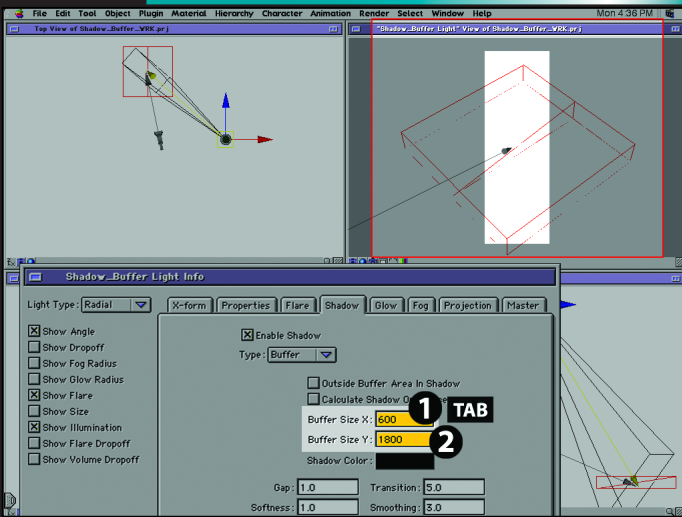
In the Camera View window, **[CTRL/RIGHT+CLK]** on the Camera View window header bar.

In the pop-up menu, select Shadow\_Buffer Light.

In the next step, pay close attention again to the shaded regions of the viewing window.



## Changing the Buffer Size



In the Shadow tab of the Light Info window, enter 600 in the Buffer Size X, then press the **[TAB]** key (or press the **[ENTER]** Key on the numeric keypad).

Notice that the Light View window changed to a narrow band, super  
widescreen...

Now, next to Buffer Size Y, enter 1800.

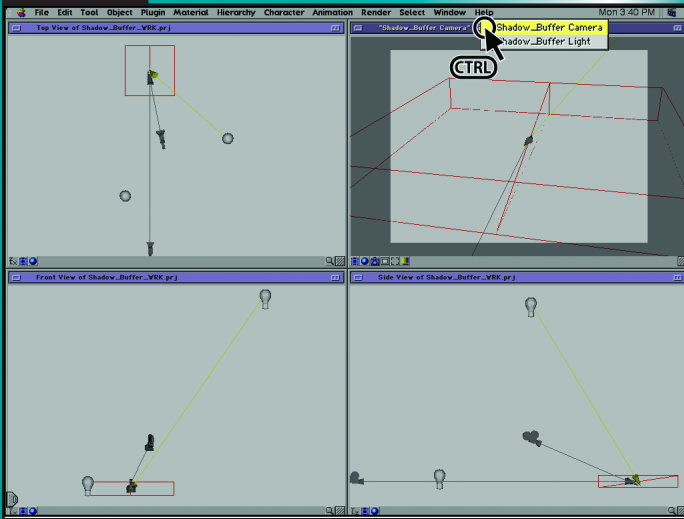
Interesting... We have seen this same narrow band in the Light View window before, when earlier we entered a 100 value for X and left Y at 1000. What do you suppose is going to happen when we render this out?





# 17

## Change the View

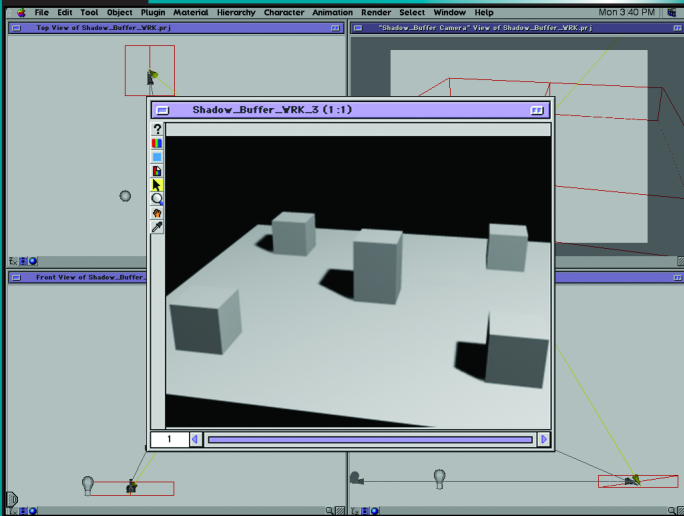


In the Camera View window, **[CTRL/RIGHT+CLK]** on the Camera View window header bar.

In the pop-up menu, select **Shadow\_Buffer Camera**.

You should now be viewing through the Camera View window (you can tell by the name on the Window menu bar).





In the lower left of the Camera View window, **[CLK]** on the Snapshot button and select "Window Size".

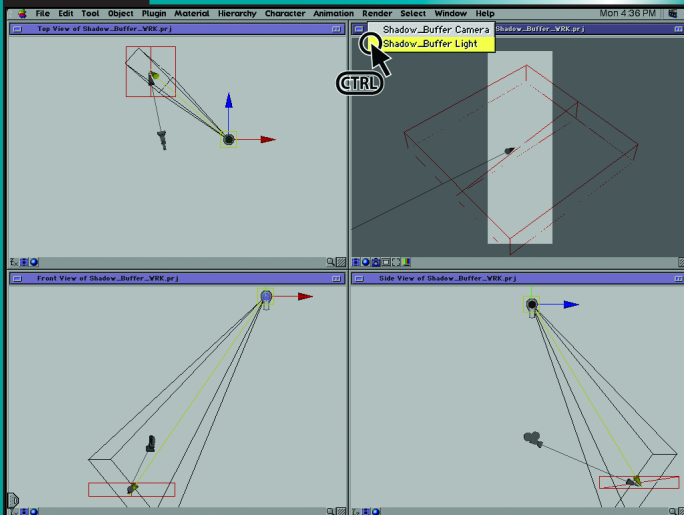
After it's done rendering, compare this render to the first 2 renders.

Notice the Shadow patterns. The resolution is back to what it was in the first render, but it's only casting shadows on three of the blocks. The lower left block and the upper right block have no shadows. Why is that? You'll find out in the next step.



# 19

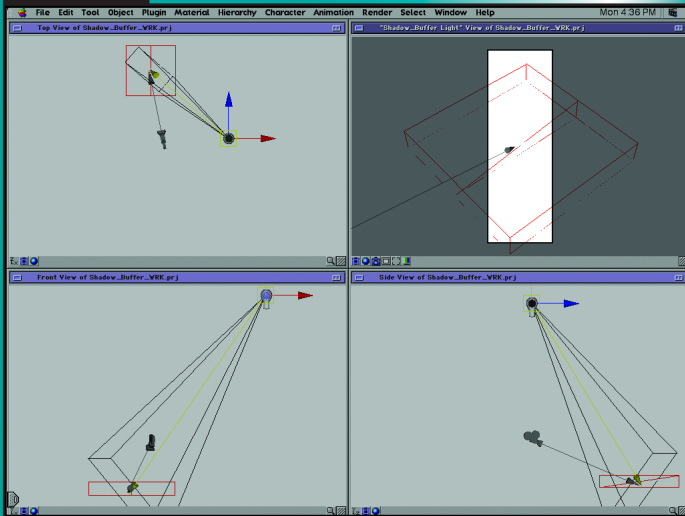
## Change the View



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

In the pop-up menu, select **Shadow\_Buffer Light**.

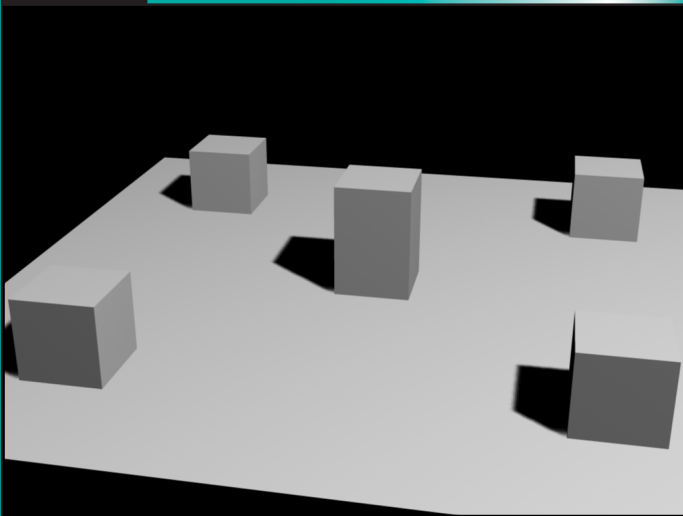




This narrow band (where it's not shaded) is where the light will cast a shadow. Anything that is in the shaded areas will cast no shadow.

In this case, it would be odd... but, if the center blocks were the only subjects, it would be much more efficient to have a Shadow Buffer that is not square..





That's it! You have just seen how Shadow Buffers can have your lights A) adjust the shapes and sizes of your shadows and B) cast shadows in only certain areas of your scene. Both methods can effectively cut down the time it would take for your scene to render. Hopefully, you now have a good idea of how to adjust a shadow buffer and why you would want to.

Shadow buffer control is used in nearly every professional product, so make sure you get it completely.

