

(Tutorial 1.5 begins further down on this page.)

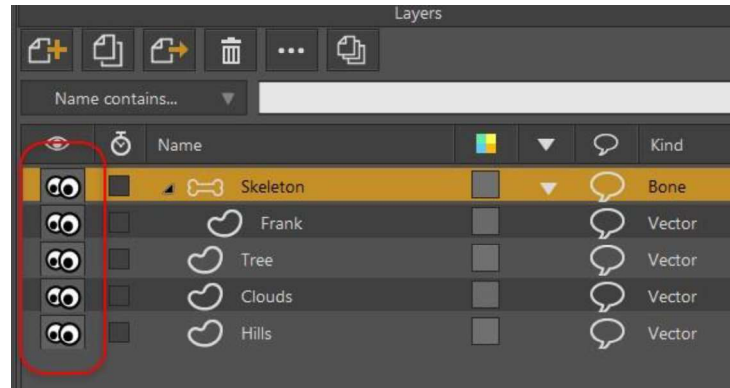
Tutorial 1.5: Animation

There are three basic ways to animate objects in Moho:

- animating an entire layer,
- using bones to animate parts of an object,
- animating the individual points on an object

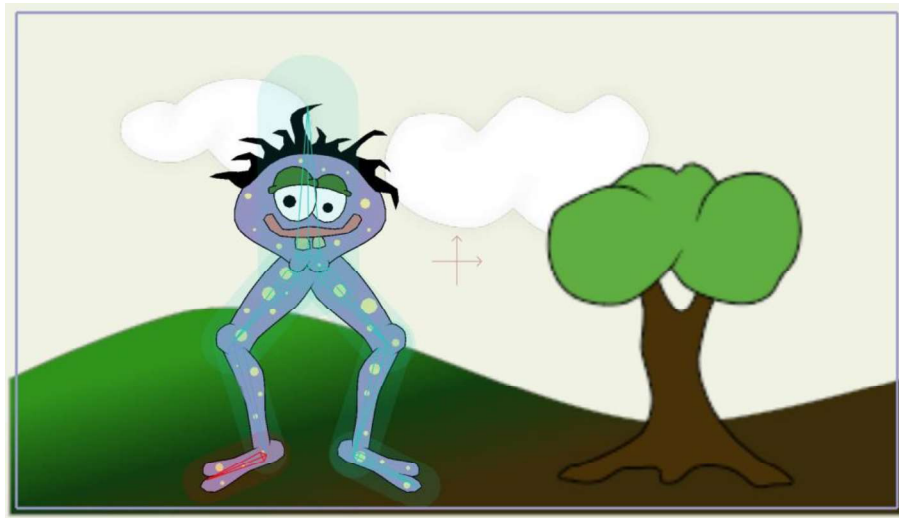
These three types can be combined to make very complex animations. This tutorial will walk you through all three types of animation.

Open your previous project [Tutorial 1.4](#) in Moho. Make sure all the layers are visible by clicking to turn on each layer in the Layers window.



Turn on all layers

Your window should look something like this:

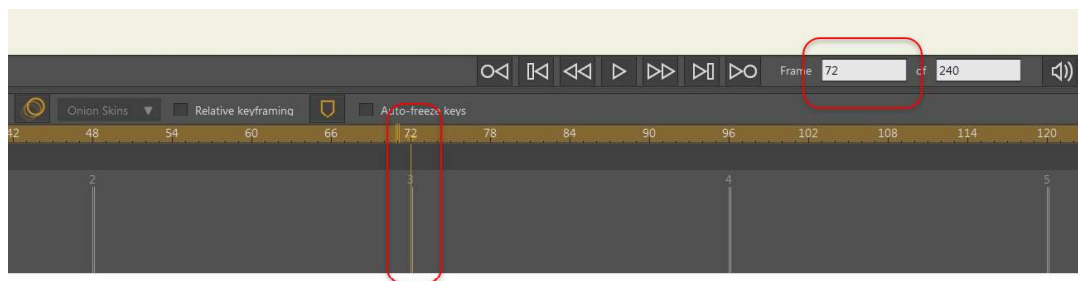


Starting point for this tutorial

Layer Animation

Layer animation is the most simple way to make objects move around in a Moho animation. It's limited in the way you can move the objects, but in some cases it's all you need. Layer animation moves an entire layer around as if it were painted on a pane of glass.

Click the Clouds layer in the Layers window to activate it. Next, set the current time to frame 72. This is done in the Timeline window. To set the time, scroll the timeline panel sideways (if necessary) until you see the number 72 in the ruler at the top. Click on the number 72 and the time marker will jump to that frame, as shown below:

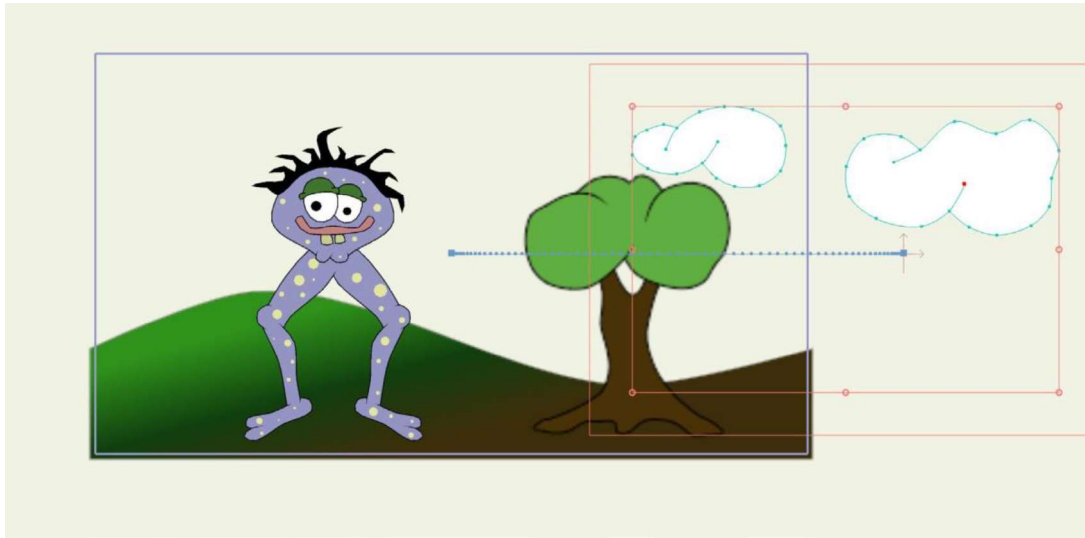


Time set to frame 72



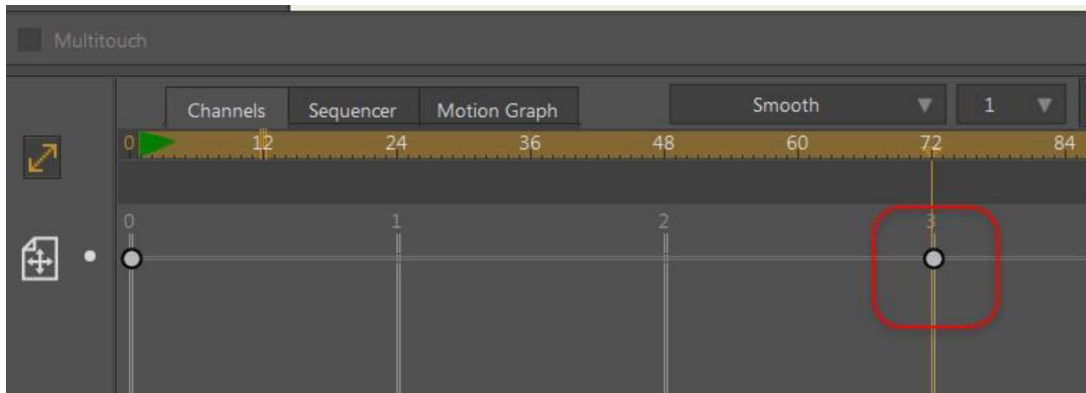
Select the **Transform Layer** tool from the toolbar.

Click and drag to the right in the working area to move the cloud layer to the right. You can press the Shift key, if desired, to constrain the movement to a straight line.



Moving the cloud layer

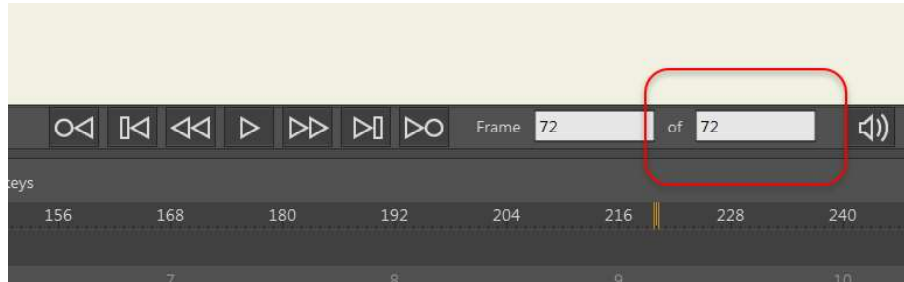
Notice that a marker appeared in the timeline at frame 72. (You may have to scroll downwards to see the marker.) This marker represents a keyframe - a point in time at which the layer has been given a position. There are several animation channels displayed in the Timeline panel. This keyframe appeared in the Layer Translation channel, because that's what type of action you just performed - you translated (moved) a layer.



The new keyframe

Try out the animation so far: press the play button at the bottom-left of the main window. The animation loops when it reaches the end (in this case frame 240). When you've seen enough, press the stop button.

If you prefer, you can shorten the length of the animation to 72 frames, so that it will loop back to the beginning once it reaches the last keyframe. Simply change the total number of frames to 72 as shown below.

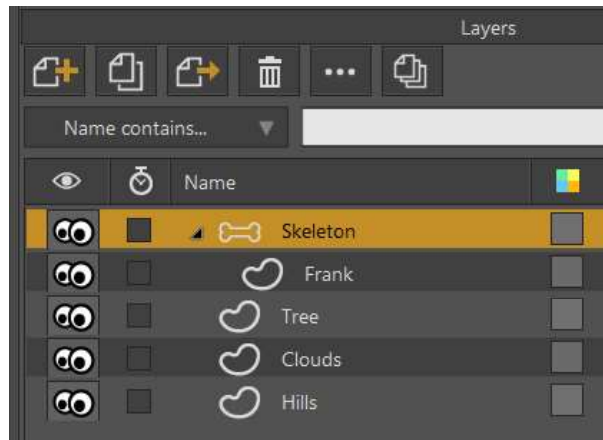


Shorten the length of the animation to 72 frames, if desired

Bone Animation

Bone animation uses skeleton structures to move an object around. You got a good feel for how bones work in the previous tutorial when you used the Manipulate Bones tool. When animating bones you use very similar tools.

Activate the Skeleton layer by clicking its entry in the Layer panel.

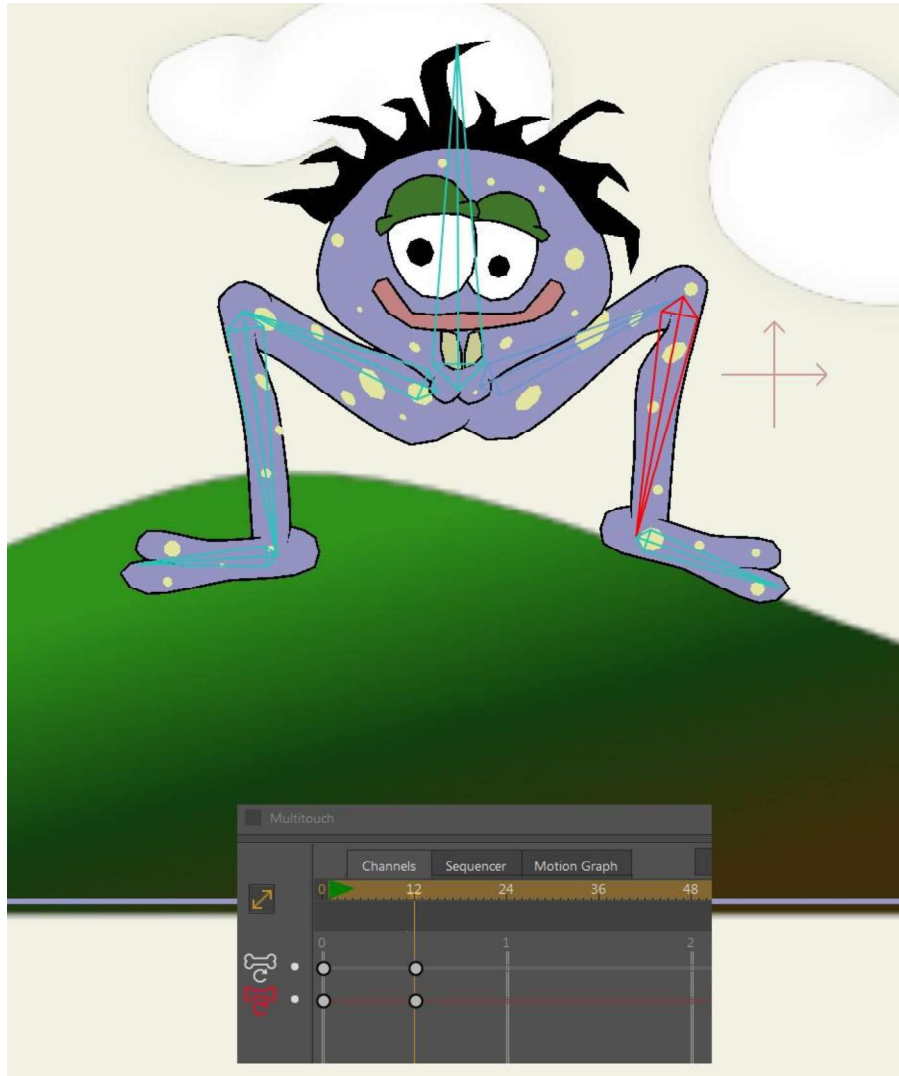


Activate the Skeleton layer

Set the time to frame 12 by clicking the number 12 in the Timeline window. (You may have to scroll the Timeline window before you can see the number 12.)



Now, pick the **Manipulate Bones** tool in the toolbar. Click and drag the bones in Frank's legs until they are positioned as shown below:

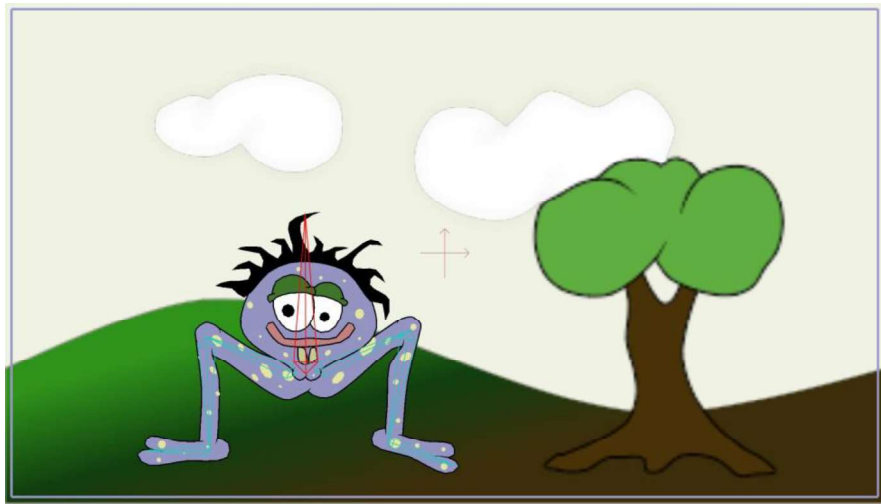


Move Frank's legs up at Frame 12

Note that the Manipulate Bones tool works differently at frame 12 than it did at frame 0 in the previous tutorial. At frame 0, this tool is used to test a bone system, and doesn't permanently modify the bones. However, when you are animating bones (at any frame other than 0), the bones do hold their new position.

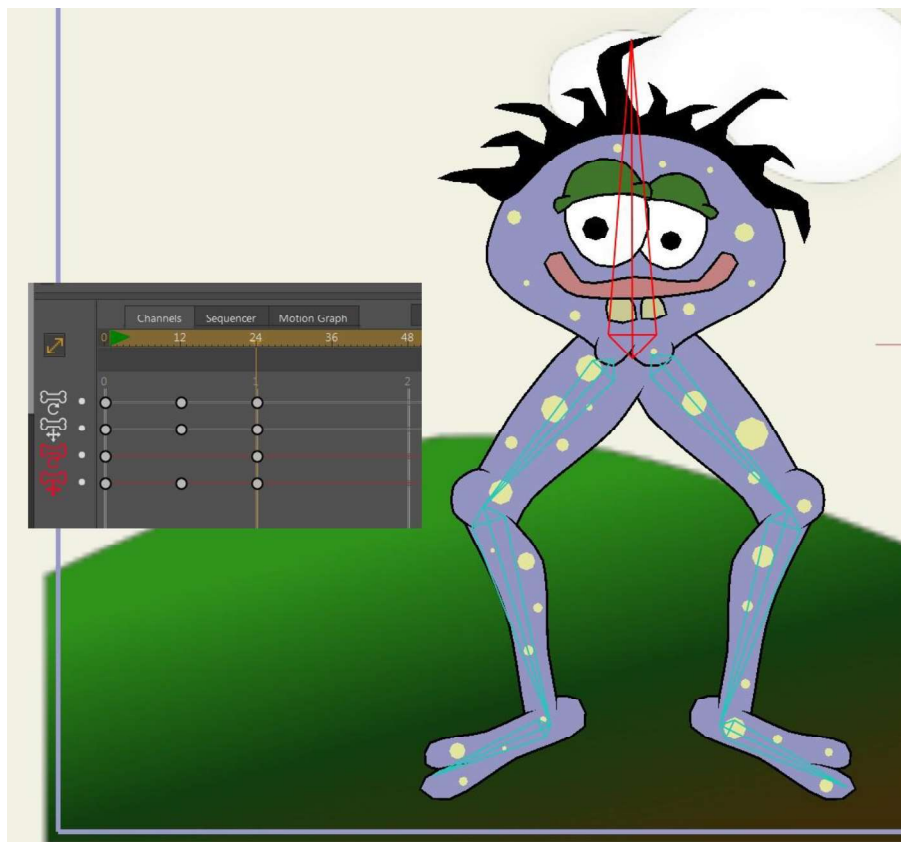


Next, pick the **Transform Bone** tool. Click on Frank's spine bone and drag it downwards a bit:



Lower Frank's entire body

Next, set the time to frame 24 and choose the **Bone > Reset All Bones** menu command. Press the play button to watch your animation, and press stop when you're done.

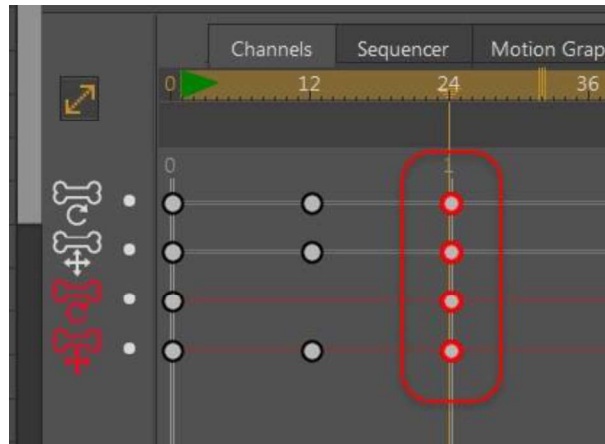


Reset all bones at Frame 24

When you played back the animation, you probably noticed that after frame 24, Frank doesn't move any more. You could add more keyframes by setting the time

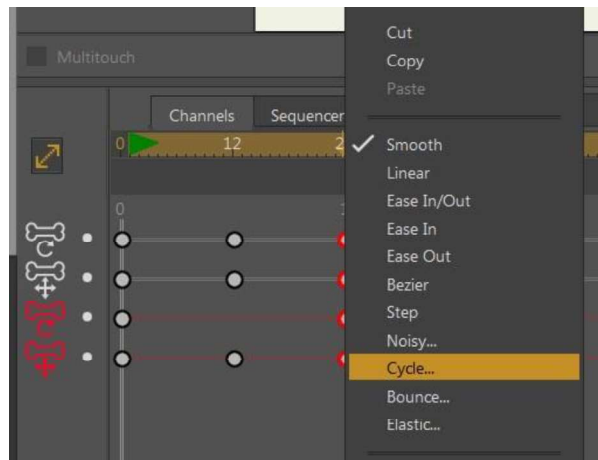
to some later frame and moving Frank's bones some more, but let's try out Moho's animation looping feature.

In the timeline, you should see a group of keyframes at frame 24. These keys represent bone movement (the spine bone moving up and down) and bone rotation (the bending legs). Drag a rectangle around these keyframes to select them:



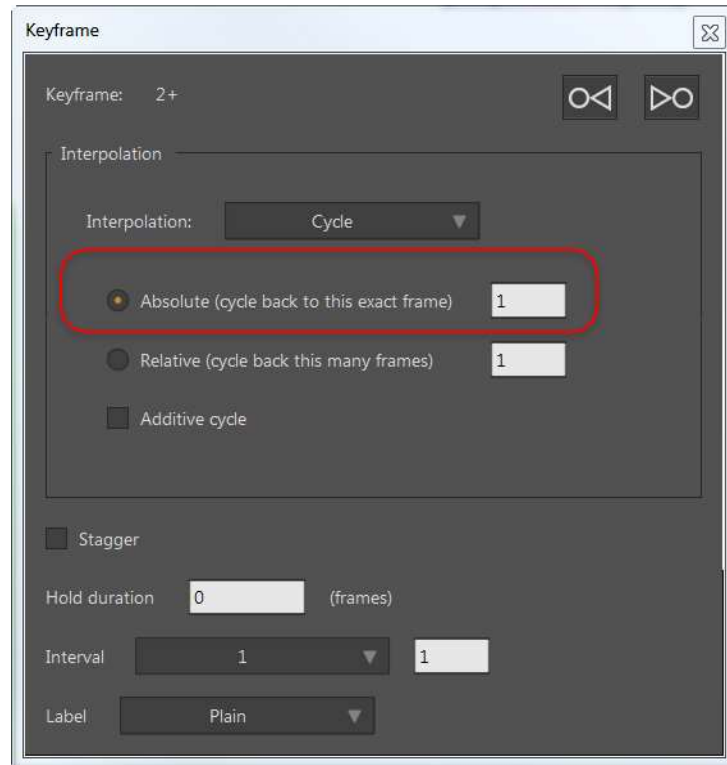
Select bone keyframes at frame 24

Next, right-click on one of these selected keys. A popup menu will appear. Select "Cycle..." from the popup menu.



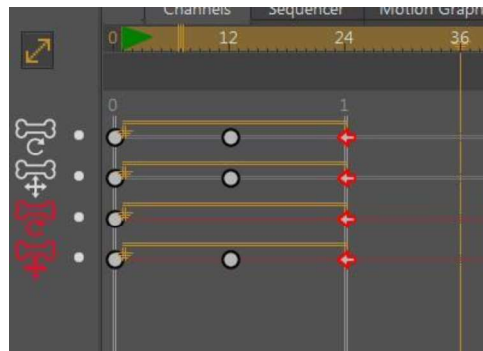
Select Cycle

What you're telling Moho is that you want these keys to cycle back to an earlier point in the timeline. A dialog will appear asking you what frame to cycle back to - enter the settings shown below. You're telling Moho that on this keyframe, the bone movement should cycle back to frame 1.



Cycle settings

Close the Keyframe dialog and press the play button to see the difference. An animation channel with cycling turned on will repeat its animation over and over indefinitely. Typically this would be used for some kind of background element, not a foreground character like Frank, but it's a great time saver. In the timeline you can see an indication of the cycling in the bone channels:

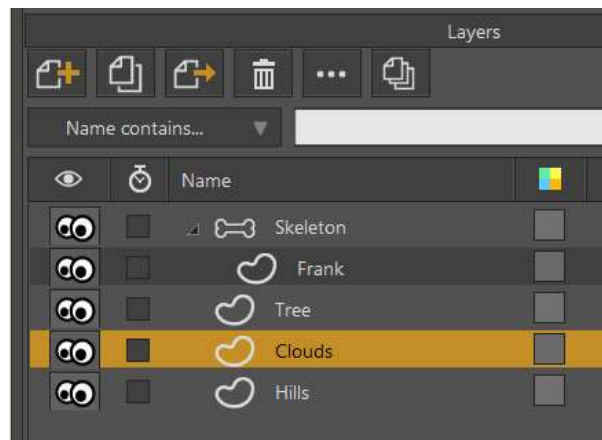


Cycling indicated in the timeline

Point Animation

Using point animation, you drag around individual points (or groups of points) on an object. In theory, you could animate the same types of motion as with bone animation - bones just save you a lot of work. Point animation is more typically used when you want to change the shape of some object.

Click the Clouds layer in the Layer panel to activate it.



Activate the Clouds layer



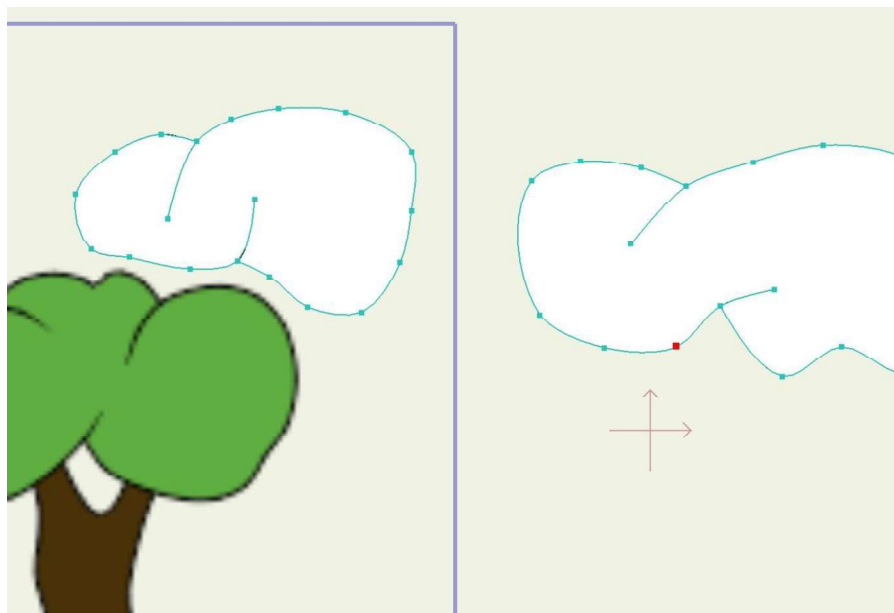
Pick the **Transform Points** tool from the toolbar.

Click on any empty space in the editing view to make sure no points are selected. Finally, click the Jump to End button to jump to the end of the animation.



Jump to End button

Click and drag individual points on the clouds in small amounts, just to reshape the clouds a bit. This will cause the clouds to change their shapes slightly from the beginning of the animation to frame 72.



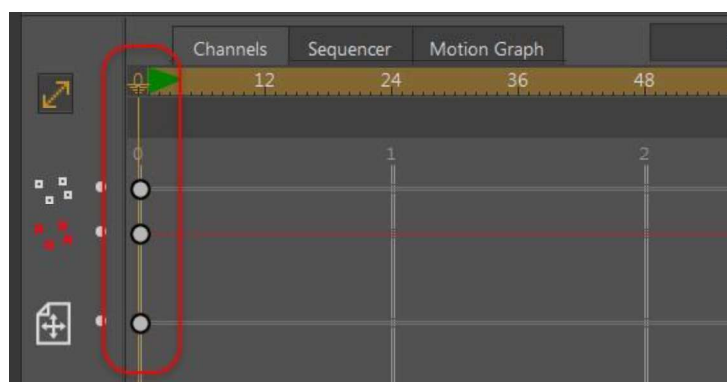
Change the shape of the clouds on the last frame

Use the play and stop buttons to see the result.

Importing Animation

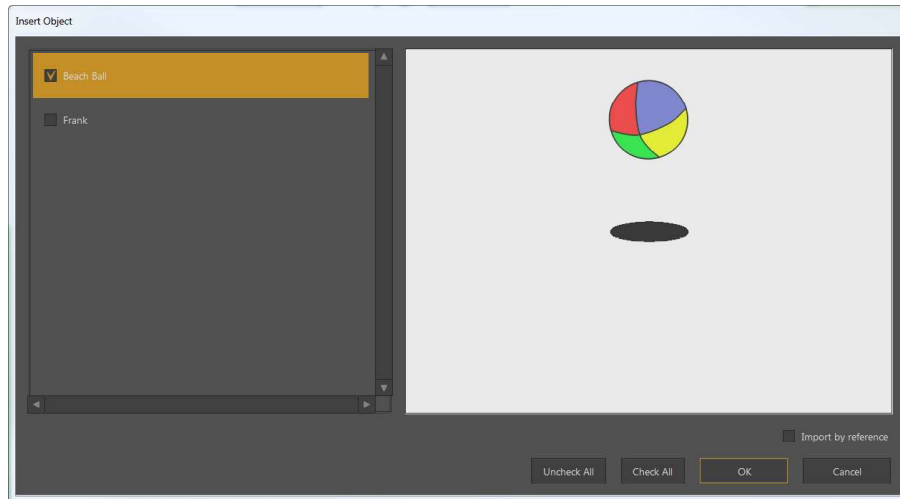
Remember how the Frank layer was imported into the project in the previous tutorial? Well, imported layers can also contain animation.

First, return to Frame 0 in your animation.



Return to frame 0

Select **File > Import > Moho Object....** When prompted, locate the /Tutorials/1-Basics folder (in your custom content folder), and open the file "Tutorial Extras." In the dialog that pops up, select the Beach Ball layer and click OK.



Import the beach ball

A bouncing beach ball will appear in your project. Press the play button to watch it go. It bounces all right, but it's not really in the right position.

Switch back to frame zero (press the rewind button in the timeline) to set the ball's initial position.



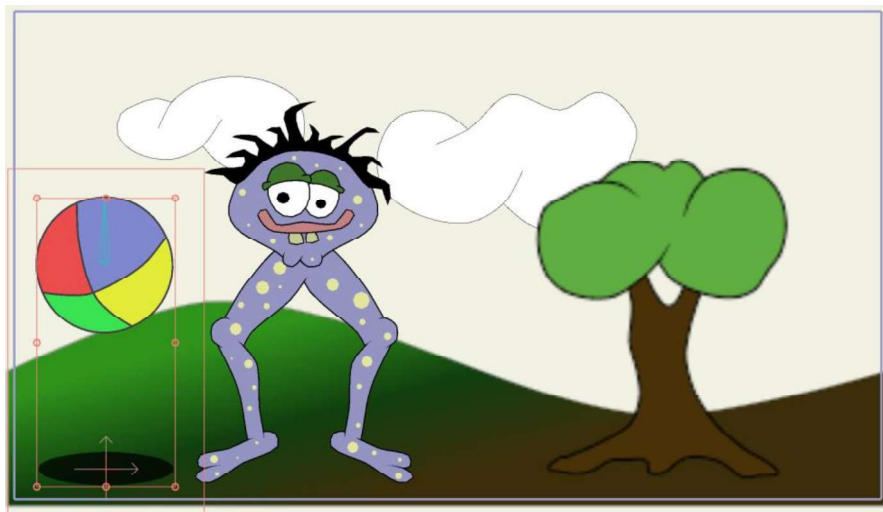
Using the **Transform Layer** tool, drag the beach ball to a better location.



Repositioned beach ball



You can also use the **Transform Layer** tool to resize the ball. (Drag one of the corner handles of the scale control box to resize the beach ball the same amount in width and height.) Press the Play button to view the final animation.



Play the final animation