



Motion

Creating Animation with Behaviors

- Part 1: Basic Motion Behaviors
- Part 2: Stacking Behaviors
- Part 3: Using Basic Motion Behaviors in 3D
- Part 4: Using Simulation Behaviors
- ▶ Part 5: Applying Parameter Behaviors ◀
- Part 6: Cloning a Group
- Part 7: Animating Cameras

Part 5

Applying Parameter Behaviors

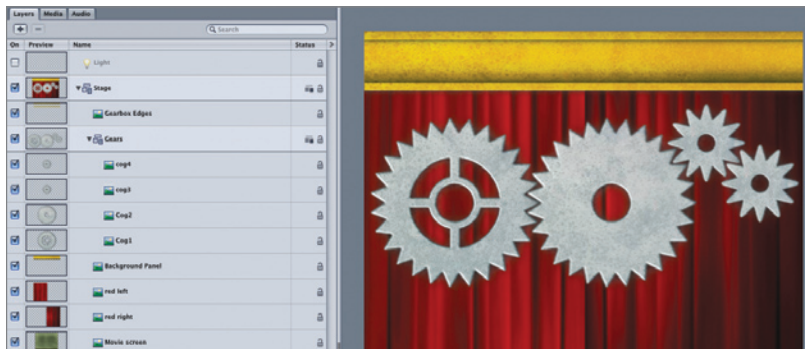
NOTE ▶ This is the fifth part in a series of tutorials that build upon each other. Before beginning this part, make sure you've completed the exercises in Parts 1–4.

Parameter behaviors are powerful little critters that work differently from the other behaviors you've worked with so far. You use them to create animation by applying them to a specific parameter you want to animate.

In this exercise, you will use several Parameter behaviors to animate a set of gears that appear to open the curtains of a stage. You'll learn a couple of methods for applying and adjusting Parameter behaviors, clone groups of animated layers, and combine Parameter behaviors.

You can choose the parameter you want to animate with a Parameter behavior either before or after you apply the behavior. Let's try both methods.

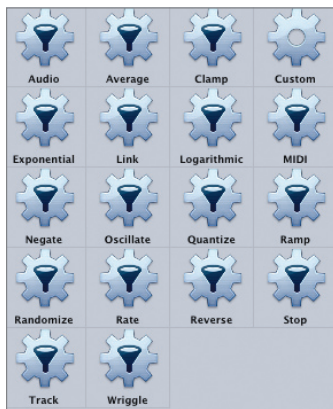
- 1 Close any open projects. In the File Browser or the Finder, navigate to Motion4_Book_Files > Lesson_06, open Parameter_behaviors_start, and save it to the Student_Saves folder. Press F5 to open the Project pane, and then open both groups.



The project contains two groups: the top-level *Stage* group, which contains several layers, as well as a group titled *Gears*, which contains the four cogs you see in the Canvas. There is also a *Light* layer, which is disabled. Currently, nothing in the scene is animated.

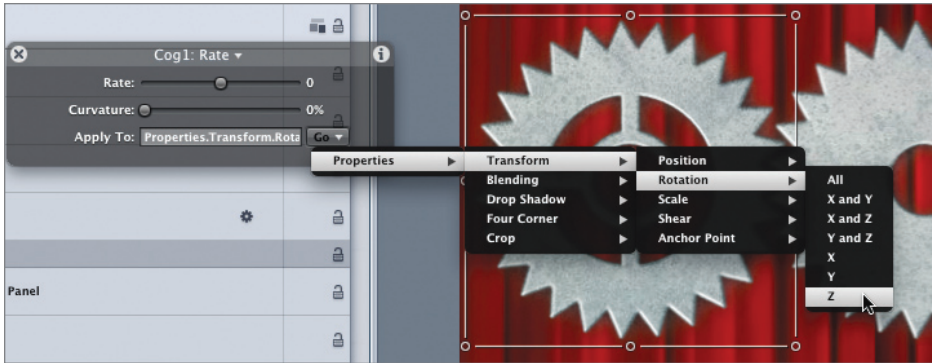
Your first task is to rotate the left-hand gear. Your first inclination might be to apply a Spin behavior from the Basic Motion category to rotate the cog, and that would certainly work. But a Parameter behavior is another option.

- 2 Press Command-2 to open the Library, choose Behaviors, and then choose the Parameter folder.



The 18 behaviors in this folder are unique because you apply them to a specific parameter of a selected layer, effect, or group. One way to apply a Parameter behavior is to add it to an object, and then choose which parameter to animate.

- 3 Start playback, and then drag the Rate Parameter behavior from the Library to the *Cog1* layer in the Layers tab. Nothing happens, because you need to tell the behavior which parameter you want to animate.
- 4 In the HUD, from the Go pop-up menu, choose Properties > Transform > Rotation > Z.



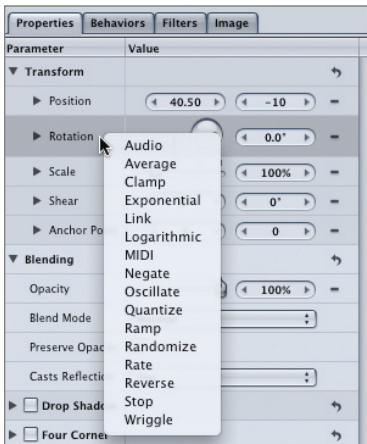
- 5 Drag the Rate slider to about -50. The cog now rotates at a constant rate of speed.

NOTE ▶ In Motion, negative rotation is clockwise.

Another way to apply a Parameter behavior is to decide first which parameter to animate, and then choose the appropriate behavior. Let's use this approach to animate the second large gear layer, *Cog2*.

- 6 Select the *Cog2* layer and press F1 to open the Properties tab of the Inspector. You want the *Cog2* layer to rotate as well, so Control-click (or right-click) the word "Rotation." The shortcut menu contains the Parameter behaviors you saw in the Library.

NOTE ▶ The list does not include the Track and Custom Parameter behaviors, which are used in more specialized circumstances.

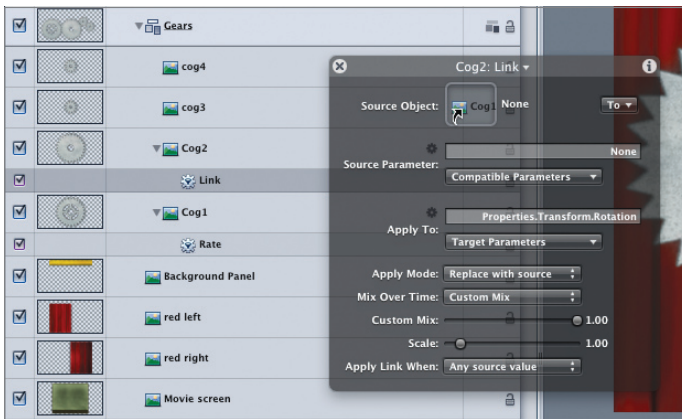


- 7 Choose Link. You could choose Rate again and try to manually match the speed of the first cog in the opposite direction. However, by applying the Link Parameter behavior, you can connect the animation of one layer to the animation of another.

The HUD indicates that the parameter is applied to the rotation of the layer, but you still need to tell it what source object to use.

- 8 Drag the *Cog1* layer into the Source Object well in the HUD.

NOTE ▶ Be sure to hold down the mouse button as you drag the layer to the well. If you click the *Cog1* layer and release the mouse button, you can select the layer, and the Link behavior will no longer appear in the HUD. If that happens, reselect the Link behavior and try again.



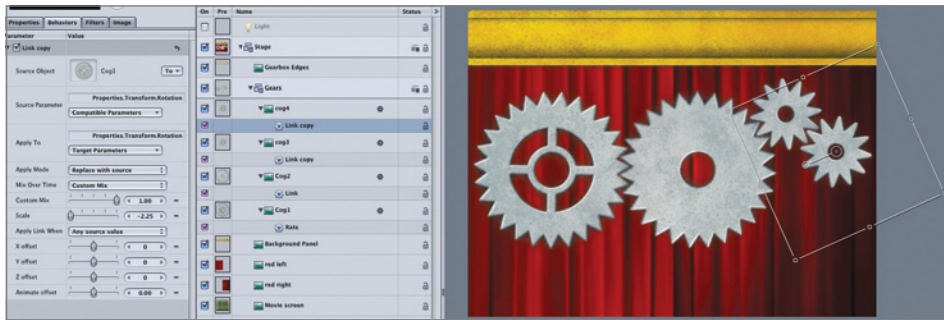
TIP ▶ You can also drag a source object directly onto the Link behavior in the Layers tab.

The *Cog2* layer now rotates, exactly matching the rate of the *Cog1* layer, but this isn't quite right. The cog should spin in the opposite direction. The Scale slider in the HUD goes down only to 0, but we can change this value in the Inspector.

- 9 In the Behaviors tab of the Inspector, in the Scale value field, type *-1*. (minus one period) and press Enter. The *Cog2* layer now rotates in the opposite direction, and its teeth mesh perfectly with *Cog1*.

The same Link behavior can be used to animate the two smaller cogs.

- 10 In the Layers tab, Option-drag the Link behavior from the *Cog2* layer to the *cog3* layer.
- 11 Select the Link copy behavior, and in the Behaviors tab, set the Scale value to 2.25. This cog needs to rotate in the same direction as the first one, and because it's smaller, it needs to rotate more quickly.
- 12 Option-drag the Link copy behavior from the *cog3* layer to the *cog4* layer; select the copy; and in the Behaviors tab, change the Scale value to -2.25. All the cogs now animate nicely together.



- 13 Turn off the Rate behavior applied to the *Cog1* layer by deselecting its activation checkbox. All the cogs stop turning because they are linked to the *Cog1* layer.
- 14 Turn the Rate behavior on, stop playback, press Home, and save your work.

With the base animation complete, you will fill the area above the curtains with gears by using clones in the next part of this series of lessons.