

#42 Creating Motion Tweens

A Note to Old-Timers

If you've used earlier versions of Flash, you may be startled when you try to set up a motion tween in Flash CS4. Previously, the steps for creating shape tweens and motion tweens were substantially the same. Now, motion tweening requires a whole new way of working: Flash creates a standard-length motion tween from a single keyframe; additional keyframes within a tween appear automatically without your having to press F6; and motion guides no longer require a separate layer. Even the familiar arrow in the timeline is gone.

If the old way worked fine, why did Adobe make such drastic changes? Here are some reasons:

- The old way didn't *really* work fine. Broken motion tweens, which were a frequent and frustrating problem, have been eliminated.
- The new way is simpler: It brings together motion tweens, motion guides, and Timeline Effects into a single, consistent interface.

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Motion tweens can accomplish many of the same things that shape tweens can (see #40). Here are the significant differences:

- Motion tweens work only with text objects and instances of symbols.
- Motion tweens can change an object's position, size, orientation, color, and opacity, but they can't morph one object into another as shape tweens can.
- Unlike a shape tween, which can include multiple objects in a single keyframe, a motion tween works with only one object at a time. If you want to motion-tween several objects simultaneously, each must be tweened separately on a separate layer.
- Motion tweens are more predictable, more reliable, and less processor-intensive than shape tweens. If you have the option of using either a shape tween or a motion tween to achieve the same effect, use the motion tween.

To create a motion tween:

1. Place an instance of a symbol on the stage in an empty keyframe. Make sure that either the object (on the stage) or the keyframe (in the timeline) remains selected.
2. Choose Insert > Motion Tween. In the timeline, a series of frames—beginning with the selected keyframe—turns blue to represent the motion tween.

The default length of a tween is one second, but you can change that by dragging the last frame of the tween forward or backward.

3. Move the playhead to any frame within the tween. On the stage, change one or more of the object's properties (including position, color, and so on). The corresponding frame in the timeline becomes a *property keyframe*, indicated by a small black diamond (Figure 42a).

Repeat this step as many times as you like.

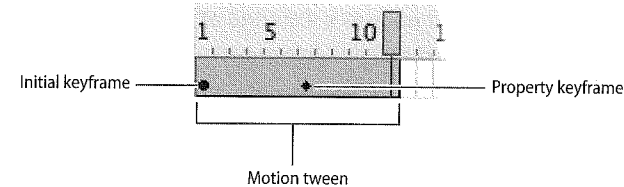


Figure 42a This is how a motion tween looks in the timeline. The frames shown here in darker gray appear blue on your screen.

4. Scrub through or preview the movie to see the motion tween in action.

When you drag a motion-tweened object to a different place on the stage, Flash connects the object's new location to its previous location with a thin, colored line called a *motion path*. The motion path is marked with a series of dots representing the number of frames in which the movement takes place. If you lengthen or shorten a tween by dragging its last frame in the timeline, the number of dots changes accordingly.

By default, a motion-tweened object moves in a straight line. To change the straight motion path to a curve, drag it from the middle with the Selection tool (Figure 42b), just as you do with the straight outlines of editable objects (see #6). If you're comfortable working with the Pen tool, you can also reshape the line segment by treating its endpoints as the anchor points of a Bézier curve (see #12).

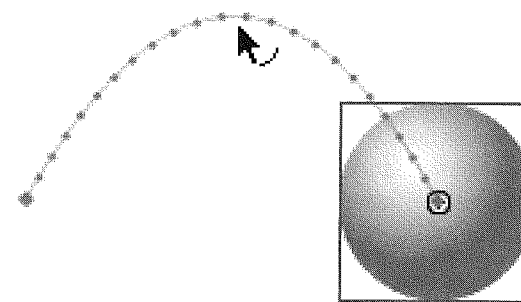


Figure 42b You can change a straight motion path to a curved path by dragging with the Selection tool.

Creating a motion tween causes the layer the motion tween is on to become a *tween layer*. Unlike a regular layer, a tween layer can hold only one object at a time, and only if that object is motion-tweened. It's possible to put several motion-tweened objects on one layer, but only if each tween ends before the next one begins (Figure 42c).

- Flash now looks and works more like other motion-oriented applications from Adobe, such as Premiere Pro, After Effects, and Director.

For the sake of flexibility, Flash still allows you to make old-style motion tweens, now called *classic tweens* (see #45). But don't use that as an excuse to avoid learning the new procedures—those *classic tweens* most likely won't be around forever.

Back in Black

It's a cinematic tradition to have the first scene of a movie fade up from a black screen, and the last scene fade to black. An easy way to achieve these effects in Flash is to create a graphic symbol of a black rectangle and to place an instance of it in the timeline so it covers everything on the stage. At the beginning of the movie, you can motion-tween the rectangle from full opacity to zero opacity; then do the opposite at the end.

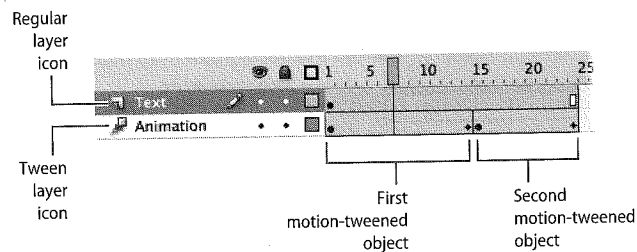


Figure 42c A tween layer has a distinctive icon in the timeline. The layer can hold multiple motion-tweened objects, but only one at a time.

Looking Out for Number One

A tween layer can hold only one object at a time. What happens, then, if you have several objects in a single keyframe and attempt to motion-tween them?

- If two or more of the objects are selected, Flash displays a dialog box asking whether you want to convert the selected objects into a symbol. Clicking OK causes those objects to be motion-tweened as a single instance of a new symbol.
- If only one of the objects is selected, and it's an object that can be motion-tweened (such as a group or an instance of a symbol), Flash motion-tweens that object. At the same time, Flash creates a new layer and moves the remaining objects into a new keyframe on that layer.
- If only one of the objects is selected, and it's an object that *can't* be motion-tweened (such as an editable shape), Flash displays a dialog box asking whether you want to convert the object into a symbol. Clicking OK causes the selected object to be converted and motion-tweened; the remaining objects are moved into a new keyframe on a new layer.

#43 Setting Motion Tween Properties

Flash allows you to enhance a motion tween in several ways. When you select a motion tween in the timeline by clicking anywhere within it, the following controls appear in Properties:

- **Ease.** By default, a tween moves at a constant speed. The Ease control allows you to vary the speed by choosing a number from -100 to 100. A negative number represents “easing in,” in which the tweened object starts moving slowly and gradually speeds up; a positive number represents “easing out,” in which the object starts quickly and gradually slows down. The differences in speed are reflected in the spacing of the dots along the motion path: Dots that are closer together represent slower movement; dots that are farther apart represent faster movement (**Figure 43a**).



Figure 43a The spacing of the dots along a motion path indicates variations in the speed of the tween.

- **Rotation.** The Rotation Count and Additional Rotation controls determine how many times the tweened object rotates between the start and the end of the tween (**Figure 43b**). The default Rotation Count setting is 0—no rotation—but you can set the number of rotations as high as you like.

Tip

Flash needs several frames to animate the rotation of an object. Therefore, it's best to limit the number of rotations to less than one-third of the number of frames in the tween.

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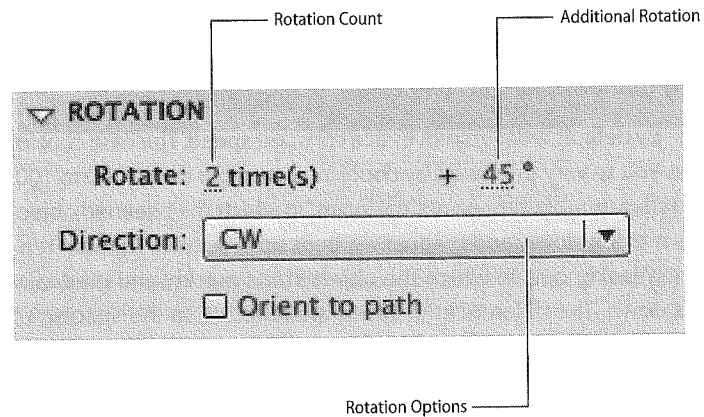


Figure 43b The Rotation controls.

The Additional Rotation control allows you to specify a partial rotation. For example, if you want the tweened object to rotate two-and-a-half times, you can set the Rotation Count to 2 and Additional Rotation to 180 degrees. (A full rotation is 360 degrees.) The direction of the rotation may be set on the Rotation Options menu.

Selecting the Orient to Path option causes the tweened object to “face forward” along the motion path the way a car would follow a road (**Figure 43c**). With this option deselected, the object keeps a constant orientation regardless of the direction of the path.

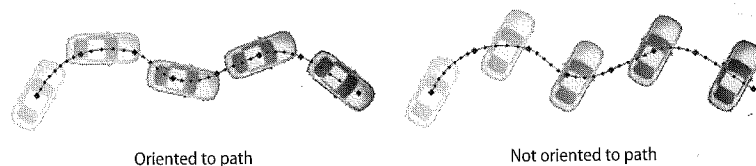


Figure 43c Left: a motion tween with Orient to Path turned on. Right: the same tween with Orient to Path turned off.

- Path.** These four controls allow you to change the horizontal position, vertical position, width, and height of the motion path. To keep the width and height in proportion to one another, click the link icon to the left of the width control.

- Options.** The Sync Graphic Symbols option affects the behavior of graphic symbols that contain animation (see #36). If several symbol instances are tweened sequentially on a single layer (see Figure 42c in #42), selecting this option keeps the instances in step with one another. Let's say you have two graphic symbols, each of which contains 36 frames of animation. If an instance of the first symbol is motion-tweened in the timeline for 24 frames, followed immediately by a tweened instance of the second symbol, selecting Sync Graphic Symbols causes the second instance's internal animation to begin playing from frame 25 rather than from frame 1.

#44 Using the Motion Editor

As you learned in #42, the changes you make to a motion-tweened object's properties are marked by property keyframes. The Motion Editor, a new feature in Flash CS4, allows you to assign property keyframes, not just to an object's position on the stage, but also to the object's scale, skew, color effects, filters, and rate of easing (**Figure 44a**). You can access the Motion Editor by clicking its tab in the Timeline panel.

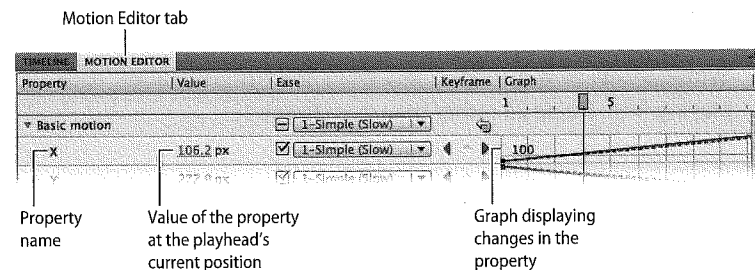


Figure 44a The Motion Editor provides independent controls for each of a motion tween's properties.

Each property in the Motion Editor is accompanied by a graph—essentially a miniature timeline—displaying the changes in that property. You can drag the playhead through the graph and watch the results on the stage, just as you would with the full timeline.

Tip

To enlarge the graph for a particular property, click the property name in the Motion Editor. Only one graph can be enlarged at a time.

A property that remains unchanged is indicated by a horizontal line in the graph. By right-clicking (Windows) or Command-clicking (Mac) anywhere along that line, you reveal a contextual menu containing an Add Keyframe command (**Figure 44b**). Choosing that command inserts a property keyframe at the point where you clicked. Dragging the property keyframe upward increases the setting for that property; dragging it downward decreases it. (If you prefer, you can adjust the setting by typing or selecting a number in the Value column.)

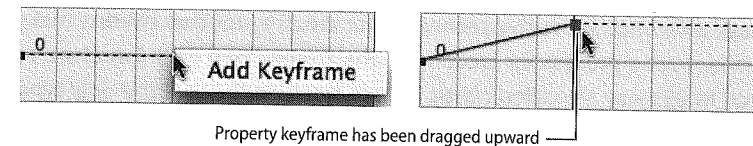


Figure 44b Choosing Add Keyframe from the contextual menu (left) inserts a draggable property keyframe (right).

By default, property keyframes in the graph are connected by straight lines. Changing those lines to curves causes a property's value to accelerate or decelerate—similar to easing in or easing out—instead of increasing or decreasing linearly. To make this change, right-click (Windows) or Command-click (Mac) a property keyframe and choose Smooth Point from the contextual menu (**Figure 44c**). Flash adds direction lines and direction points to the keyframe, allowing you to treat it as the anchor point of a Bézier curve (see #12).

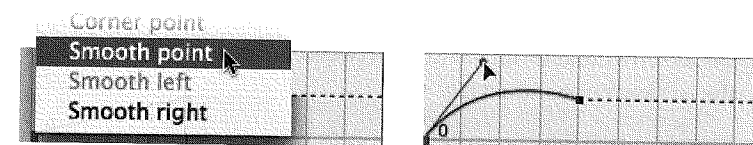


Figure 44c Choosing Smooth Point from the contextual menu (left) adds direction points to a property keyframe (right). Dragging a direction point turns the adjacent line into a curve.

Each property in the Motion Editor can be adjusted independently. Keyframes and settings for one property don't have to correspond to those for any of the other properties; even the use of easing can differ (**Figure 44d**).

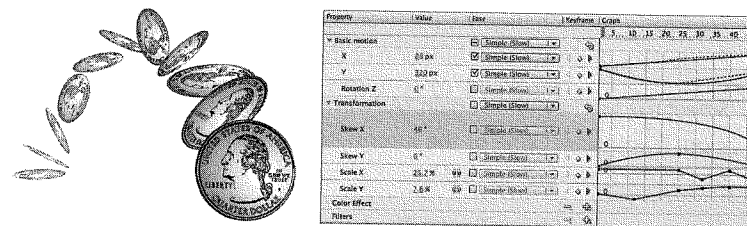


Figure 44d The realistic flip of a coin on the stage (left) is made possible by an assortment of property settings in the Motion Editor (right). Dotted lines indicate that easing is in effect.

Easing with Ease

While the Properties panel allows only the choice of easing in or easing out (see #43), the Motion Editor offers many more types of easing, including fun settings such as Spring and Bounce. You can choose as many types as you want from the Add Ease menu (whose icon looks like a plus sign) in the Eases section of the Motion Editor. You can even select Custom and design your own easing style.

All the types of easing you've chosen—including any custom eases—are made available on the menus in the Ease column of the Motion Editor, allowing you to apply them to any property you like.