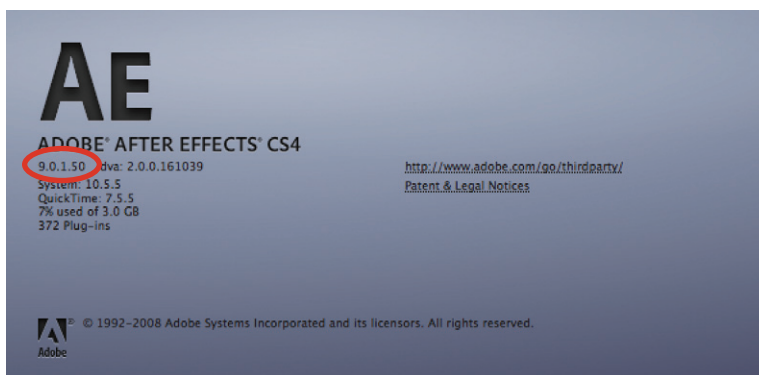


After Effects CS4

This bonus chapter for *Creating Motion Graphics 4th Edition* (CMG4 for short) covers the major differences between After Effects CS3 and CS4. It is organized according to the chapters in CMG4 which are affected by this update. We assume that you have already read CMG4, are currently working your way through it, or are familiar with the content covered in each of its relevant chapters.

We will be assuming you have After Effects 9.0.1 installed; the version number can be checked by opening After Effects > About After Effects on Mac (Help > About After Effects on Windows) and looking at the tiny numbers under the program's name. If you are still using version 9.0.0, choose Help > Update to download the updates to After Effects as well as the other related programs and modules in Creative Suite 4.



What's changed between CS3 and CS4.

FACTOID

Replacement DVDs

If your DVD is lost or damaged, contact USBKInfo@elsevier.com. Proof of ownership of CMG4 may be required.

If you are still using After Effects 9.0.0, update to 9.0.1 as it includes many bug fixes plus the ability to use REDCODE media inside After Effects CS4 (www.red.com/support).

Note that the system requirements for After Effects CS4 have changed. Most notable for Mac users is that an Intel processor is required. The full list of requirements can be found at www.adobe.com/products/aftereffects/systemreqs.

Example Project

Copy the contents of the CMG4 DVD onto your local disc drive. Then copy the **CMG4CS4 Project** folder that came with this bonus chapter into the **Bonus Chapters** folder copied from the DVD. Open **CMG4CS4 Project > CMG4CS4.aep**. If any files are listed as missing, double-click a missing file in the Project panel (its icon will resemble television color bars) and locate the file by the same name in the **SOURCES** folder that also came from the DVD. After Effects will then automatically find all of the other missing files.

1 After Effects 101

The user interface received an overhaul between CS3 and CS4. Generally it is darker and more compact, with updated icons that should be easier to read across a wider range of user interface brightness settings (adjusted in Preferences > Appearance). Other major changes include:

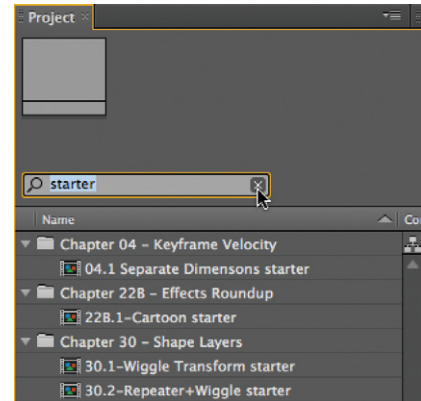


- A new Welcome screen that includes a searchable Tip of the Day, as well as links to your most recent projects, the Help system, and common tasks such as opening Bridge to browse template projects or other potential source material. It can be re-opened at any time by choosing Help > Welcome and Tip of the Day.

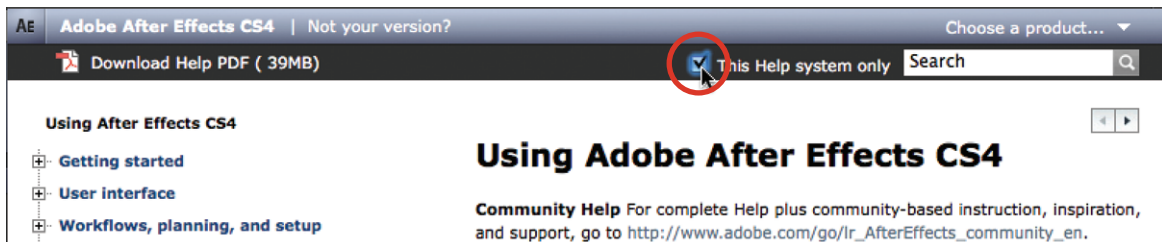
The new Welcome screen also offers ways to open files and access Help resources.



- QuickSearch fields in the Project and Timeline panels. These make it much easier to find specific sources or parameters, as well as comments in these panels (by the way, the Comment column is now enabled by default in the Project panel). Related to this, the old Find icon has now disappeared from the bottom of the Project panel; it has been replaced by using the QuickSearch field in the Project panel. You can type in the name of the file you are looking for, characteristics of it such as duration or file extension, or the special phrases “missing”, “used”, and “not used”.
- The names of comps, layers, footage items, and other elements are no longer restricted to 31 characters.
- After Effects projects can now optionally be saved using an XML format (File > Save a Copy As XML). This will be a boon to those who would like to use scripting to automatically update or modify projects to streamline production pipelines.



The QuickSearch field at the top of the Project panel replaces the old Find a Project Item icon.



Improved Help

Another major overarching feature in After Effects CS4 is an improved Help system. If After Effects detects an Internet connection upon startup, Help will now automatically access a much more extensive, regularly updated web-based Help system instead of the local Help file installed with the program.

Note that there is more than one help system you can search, and there are big differences between them. If you press F1 or choose Help > After Effects Help in version 9.0.1, you will be placed in the After Effects-specific Help system; to search only inside this system, be sure to enable “This Help system only” when performing a Search on this page. If instead you use the QuickSearch dialog in the top right of the Tools panel or choose Help > Community Help and Support, you will land in a much broader help system which searches other Adobe help systems as well as non-Adobe web sites. Community Help also includes links to useful articles and tutorials in addition to the normal Help system.

If you wish to perform a search only inside After Effects Help, make sure you enable This Help System Only.

What’s in a Name?

Several panels in After Effects have shorter names in CS4. As CMG4 was based on After Effects CS3, it obviously uses the original names for these panels. If you are having trouble finding a panel, refer to the following chart:

<i>old name</i>	<i>new name</i>
Align & Distribute	Align
Brush Tips	Brush
Time Controls	Preview
Tracker Controls	Tracker
The Smoother	Smoother
The Wiggler	Wiggler
Smart Mask Interpolation	Mask Interpolation

2 Creating a Composition

In addition to the QuickSearch dialog mentioned on the previous page, improvements have been made in the areas of previewing and working with the Composition panel.

QuickSearch

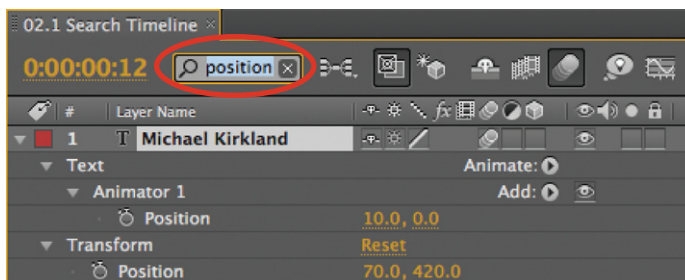
We discussed QuickSearch in the previous section. To try it out for yourself, open the **CMG4CS4.aep** project file and (if necessary) relink any missing files (the procedure is discussed in the Example Project box on the first page of this bonus chapter). Then in the Project panel, twirl open the **Chapter 02** folder and open the comp **02.1 Search Timeline**.

Step 1: This composition contains both text and shape layers, each of which contain long lists of parameters – making it hard to find exactly what you want by twirling open layers and scrolling through the timeline. For example, press Command (Control) and click on the twirly arrow to the left of the text layer **Michael Kirkland** to reveal all of its parameters, then scroll through the entire list. Pretty daunting! Twirl up **Michael Kirkland** and try the same with **Shape Layer 1**. Twirl it up too when done.

Step 2: To search all layers in the Timeline panel, Edit > Deselect All (the shortcut is F2). To reveal all the Scale parameters (and sub-parameters!) in all the layers, start to type “scale” into the QuickSearch field to the right of the Current Time display in the Timeline panel. Only the text animator, shape path transform, and overall layer transform Scale values will be revealed.

Step 3: Click on the X at the right edge of the QuickSearch field to clear your previous search (you can also select and delete the characters you had previously typed). All of the layers will automatically twirl back up.

Step 4: You can also search individually selected layers. Select **Michael Kirkland**, and type “position” into the QuickSearch field. You will see Position offset parameter for Animator 1 (which would normally take three mouse clicks to reveal), as well as for the layer’s overall Position in the composition.



TIP

Helping Hand

If you have a three-button mouse, use the middle mouse button to temporarily enable the Hand tool. This is especially useful for panning around a Footage or Layer panel for a source that may be much larger than your monitor can handle.



Some layers can have very long lists of parameters to search through in the Timeline panel (above). Using QuickSearch allows you to reveal just the parameters you're looking for (left).

Auto Resolution

The Resolution popup along the bottom of the Comp panel now includes an Auto setting. When Auto is selected, changes to the Magnification of the Comp panel will result in the Resolution setting automatically being changed to match. For example, if you set Magnification to 50%, After Effects will set Resolution to Half to ensure that only the pixels you see will be rendered. This is the most efficient way to work. This is the flip side of the old Auto-zoom. When Resolution Changes preference (see page 666 of CMG4). The main gotcha to be aware of is that some effects look radically different at lower Resolution settings, so it is a good idea to always go back to 100% Magnification/Full Resolution to double-check your work before rendering.

Previewing

The OpenGL rendering engine used for Fast Previews has been further refined in CS4. Nested compositions and depth of field blur are among the project features that may now be accelerated by the GPU (graphics processing unit) on your video card or in your laptop.

Additionally, OpenGL may also take advantage of Adaptive Resolution when attempting to preview images in the Composition panel. When enabled in Preferences > Previews, OpenGL will now work in the same fashion as the Fast Previews option Adaptive Resolution did in CS3: If you try to interactively update a particularly slow effect or composition, After Effects will temporarily render every second, fourth, or eighth pixel and line in order to give you a quick idea of what is going on, and then will render every pixel and line (as determined by the comp's Resolution setting) when you release the mouse.

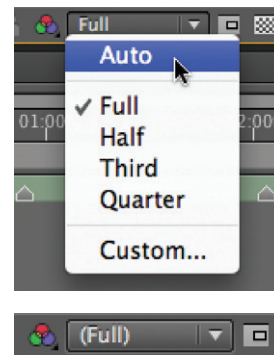
(All that said, personally we still tend to disable OpenGL Fast Previews, as the result can look different enough from the normal software rendering engine that it distracts us. We find Adaptive Resolution to be a better choice most of the time.)

(All that said, personally we still tend to disable OpenGL Fast Previews, as the result can look different enough from the normal software rendering engine that it distracts us. We find Adaptive Resolution to be a better choice most of the time.)

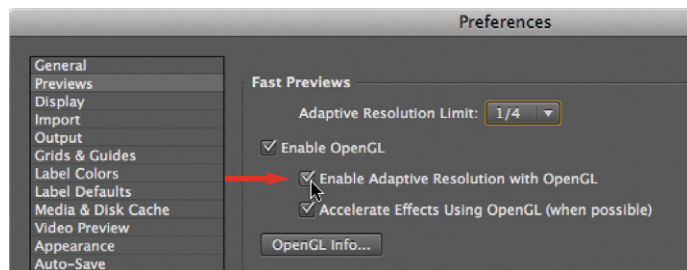
3 Basic Animation

There have been a few small additions to the way you can manipulate layers in a composition:

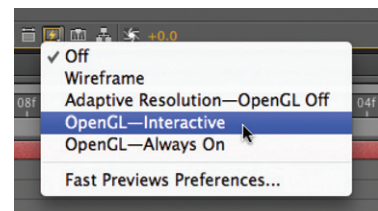
- Flip Horizontal and Flip Vertical commands have been added to the Layer > Transform submenu. These add a negative sign in front of the X and Y Scale properties, respectively. They do not affect keyframed values; if you have animated Scale, a new keyframe will be created at the current time. (Note that After Effects still has Flip, Flop, and Flip + Flop Animation Presets. These work by adding a Transform effect to the selected layer, leaving its Scale value – and its keyframes – untouched.)



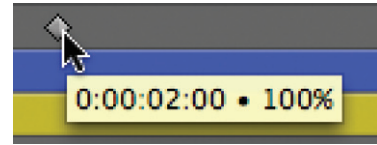
A new Auto setting under Resolution (top) keeps it in sync with the Magnification setting in order to boost efficiency. When you see the Resolution setting displayed inside parentheses (above), Auto is engaged.



To further accelerate OpenGL Fast Previews (below), turn on the Enable Adaptive Resolution with OpenGL option in Preferences > Previews (above).



- There are new keyboard shortcuts to alter the Opacity of a selected layer. Hold Control+Option (Control+Alt) and use the + and – keys on the numeric keypad to increase or decrease Opacity in 1% increments. Add the Shift key to jump by 10% increments. (By the way, that's not a typo; the Mac keyboard shortcut really is Control+Option, not Command+Option.)
- An additional feature introduced in CS4 is that hovering your cursor over a keyframe in the Timeline panel will display a tool tip containing its time and value. Unfortunately, this tool tip does not update if you drag a keyframe in time; keep an eye on the Window > Info panel to verify its new timing.



Hover your cursor over a keyframe to display its time and value.

4 Keyframe Velocity

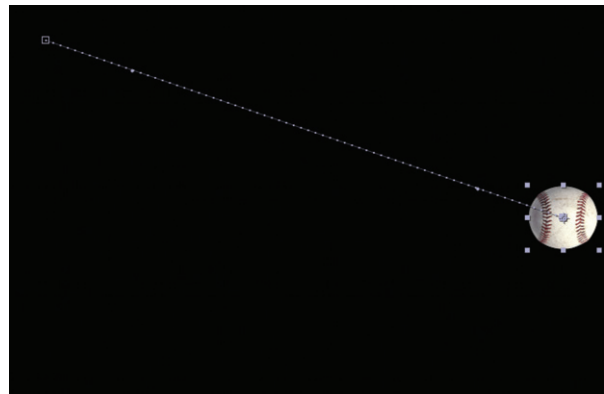
Normally, After Effects bundles the X, Y, and (if the 3D Layer switch is enabled) Z Position values into a single keyframe. A major new feature in After Effects CS4 is the ability to separately keyframe these X, Y, and Z values. This makes it much easier to keyframe certain types of animation moves, such as simulating a camera that is both on a dolly and a crane where you have independent control over its height (Z) and its sideways or forward motion (X or Z).

Separating these dimensions requires a trip into the Graph Editor. Once they have been separated, you can edit the new independent keyframes in either the Graph Editor or the normal timeline display, but it is easier to see what you are doing in the Graph Editor.

To gain a better understanding of this feature, let's work through an example of animating a bouncing ball. In **CMG4CS4.aep**, open the composition **Chapter 04 > 04.1 Separate Dimensions starter**. You might want to keep page 70 of CMG4 open next to you during this exercise to help remind you of the identity of the various buttons along the bottom of the Graph Editor.

Step 1: Your goal is to make the baseball in this composition bounce across the comp's "floor." Select the layer **GI_baseball.tif** and press P to reveal its Position property in the Timeline panel. Then click on the animation stopwatch icon for Position to enable keyframing for it.

Step 2: Move the current time indicator to the end of the comp (the shortcut is to press End). Drag the baseball to the right edge of the comp panel and about halfway between its top and bottom (roughly a Position of X=670, Y=263). You will see a straight motion path in the Comp panel connecting your two keyframes.



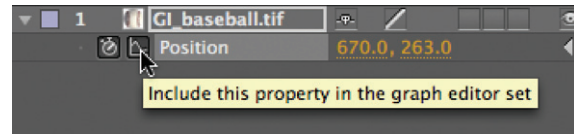
Steps 1–2: Keyframe the position of the baseball to travel across the comp panel. Baseball courtesy Getty Images.

FACTOID

New and Improved

This new Separate Dimensions feature replaces the Separate XYZ Position Animation Preset discussed in the *Advanced Position Graphs* sidebar on page 81 of CMG4.

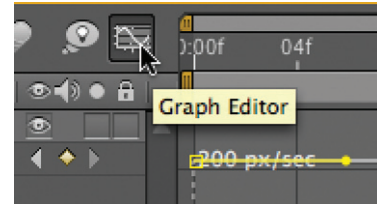
Step 3: In the Timeline panel, located between the word Position and its animation stopwatch, is a Graph Editor Set button for this parameter. Click it to enable it. This will ensure you will always see the Position property in the Graph Editor, even if you accidentally deselect the layer.



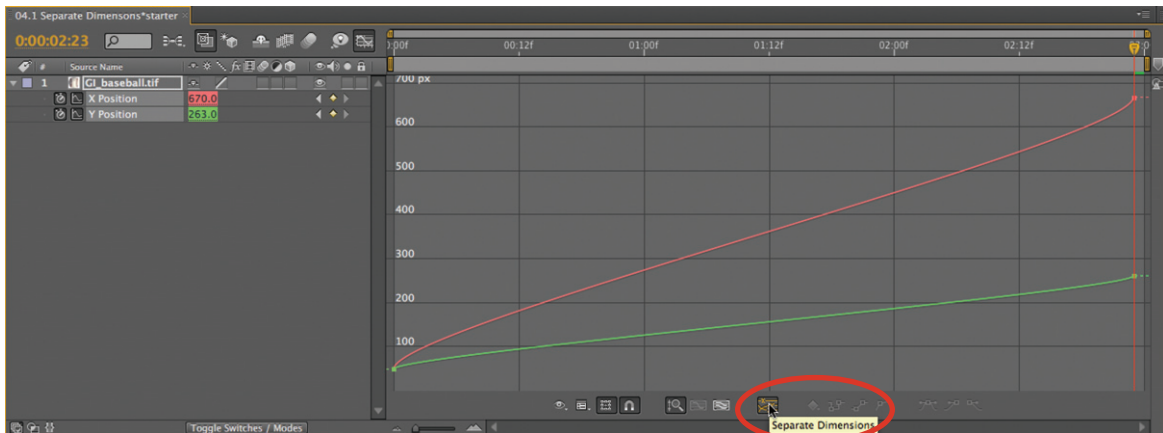
Steps 3–4: Enable the Graph Editor Set button for Position (above), then open the Graph Editor (below).

Step 4: Reveal the Graph Editor in the Timeline panel by clicking its button along the top of this panel; the shortcut is Shift+F3. Then click on the Choose Graph Type button along its bottom (to the right of the eye-ball) and make sure Auto-Select Graph Type is enabled.

After doing so, you will see a single horizontal white line in the Graph Editor. This represents the constant speed of the ball as it travels between your two keyframes. You will also notice that there is just one Position parameter along the left side of the Timeline panel.



Step 5: Make sure the Position parameter is selected. Then click on the Separate Dimensions button underneath the Graph Editor. Two things will happen:



- Along the left, the formerly unified Position value will now be replaced by separate X Position and Y Position parameters, color-coded red for X and green for Y.
- In the Graph Editor on the right, the single white velocity graph will be replaced with separate sloping green and red X and Y Position value graphs.

Step 5: After enabling Separate Dimensions, separate X and Y Position values will appear. You will also see color-coded lines for the X and Y values and velocities.

Step 6: The red X Position value graph has slight kinks at its start and end caused by the default Auto Bezier keyframe interpolation that was assigned to it. We want the baseball to keep a steady speed as it moves from left to right, so let's convert those to Linear keyframes:

- Double-click X Position to select its keyframes. They will be bound by a white rectangle in the Graph Editor.
- Click the Convert Selected Keyframes to Linear button along the bottom of the Graph Editor. The X Position value graph will straighten out.

You might also notice that the motion path changes slightly in the Comp panel; when working with Separate Dimensions, your actions in the Graph Editor directly control your resulting motion path.

- Click outside the white rectangle or press F2 to deselect the X Position keyframes.

Step 7: Next let's work on the bounces, which means editing the Y Position (up and down) graph. First we're going to set the keyframes for where the ball hits the floor, then in the next step edit the Y Position graph to create the flight path between those hits.

- Move the current time indicator to 00:15.
- Scrub the Y Position value until the ball just touches the bottom of the comp (around Y=436). Don't drag the ball in the Comp panel; that would add both X and Y keyframes!
- Make sure just the new Y Position keyframe is selected; it will have a solid yellow box in the Graph Editor, rather than a hollow yellow box. Edit > Copy this keyframe.
- Move the current time indicator to 01:15.
- With Y Position still highlighted along the left of the Timeline, Edit > Paste to create a keyframe at this new time with the same value as the previous keyframe.
- Move the current time indicator to 02:15, and paste again.

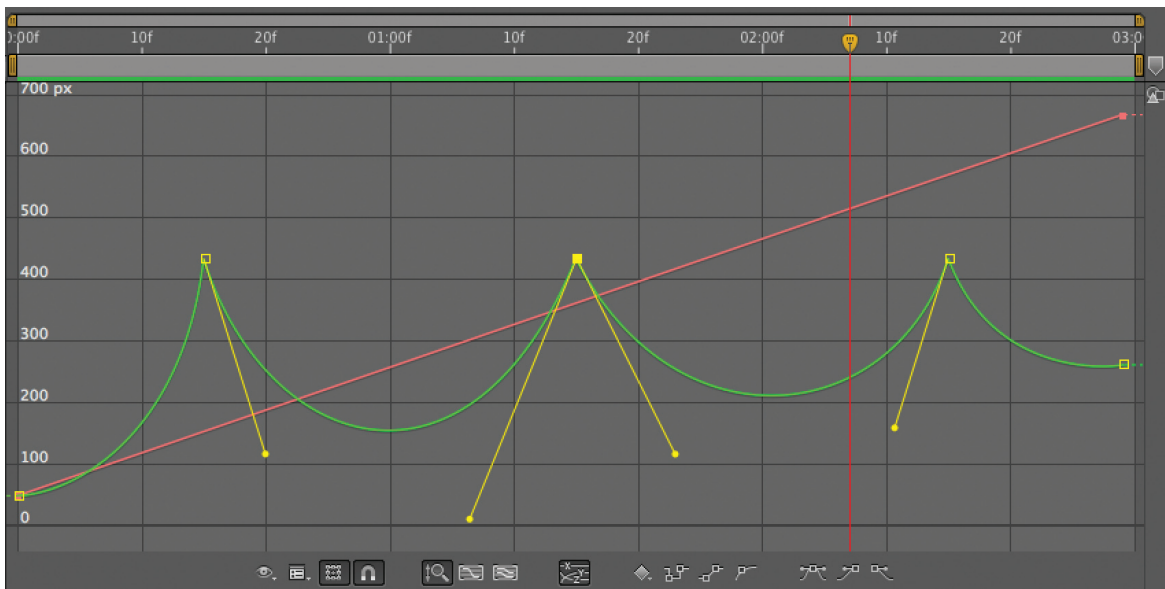
Step 8: A bouncing motion is not continuous; the ball reverses direction when it hits the floor. This means you need to create discontinuous motion at the keyframes.

TIP

No Handles?

If your Position keyframes in the Graph Editor do not have any handles, they currently have an interpolation type of Linear. To pop out handles, Option+click (Alt+click) on a keyframe to toggle from Linear to Auto Bezier.

Step 8: Tug on the Bezier handles for Y Position in the Graph Editor to create arcs into and out of each keyframe.



- Bezier handles will be visible in the Graph Editor around each keyframe, reflecting their Auto Bezier interpolation method (the default). Press the Option (Alt) key and drag one of the Bezier handles for the keyframe at 02:15 to “break” them.

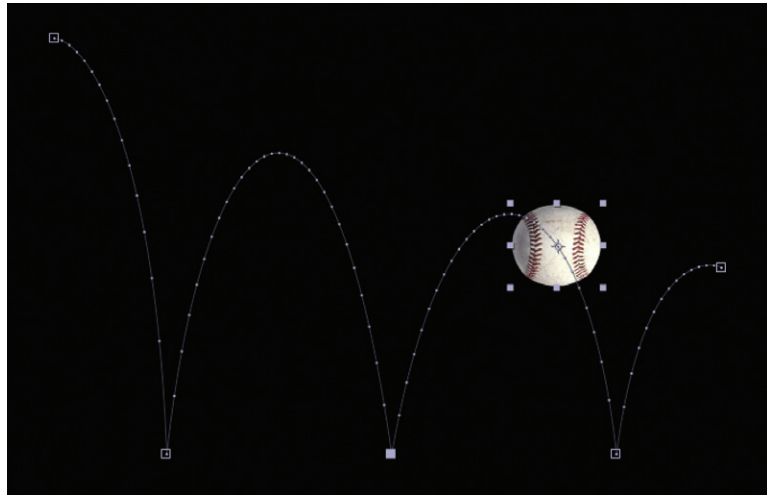
- Now that the handles are broken for that keyframe, release the Option (Alt) key and drag each handle down until you get a nice arc coming into and leaving this keyframe. You will see this arc in both the Graph Editor and in the resulting motion path in the Comp panel.

- Repeat to also break the handles and create a steep arc at the keyframes at 01:15 and at 00:15.
- Edit the curves for the first and last keyframes to help trace out a nice bounce motion path.

RAM Preview, and continue to tweak until you are happy with your motion. You can also move the Y Position keyframes in time by dragging them left and right in the Graph Editor; press the Shift key after you start dragging to constrain your motion. For example, move the fourth Y Position keyframe later to shorten the “flight time” during the last bounce. Note that this does not alter the ball’s speed in the X dimension; it alters only when it bounces in the Y dimension. Compare your results with **04.1 Separate Dimensions_final**.

Step 9: And now for the magic: Press End and decrease the X Position value. RAM Preview, and note how the ball doesn’t travel as far across the comp, but the up and down bounce motion remains the same. Without Separate Dimensions, you would have had to tweak each keyframe by hand.

In general, this animation would have been very difficult to pull off with normal, joined-together Position values – you would be fighting to keep a constant speed in X while you created your bounces in Y. However, using Separate Dimensions does come with a price: You can no longer directly edit the motion path in the Comp panel (note that the Bezier handles disappeared); you have to craft your path in the Graph Editor. The good news is that you can select Position and disable Separate Dimensions by clicking the same switch along the bottom of the Graph Editor – After Effects will then approximate your final animation using traditional joined Position keyframes.



Step 8 continued: The results will be reflected in the motion path in the Comp panel. Remember that the spacing between the dots in the motion path indicates how far the object travels between frames in time.

5 Animation Assistance

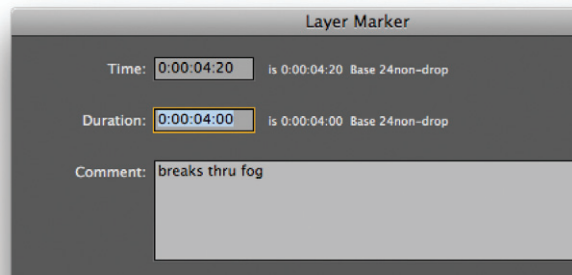
No changes in CS4.

6 The Layer Essentials

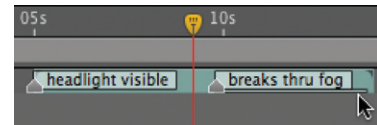
There have been two changes to markers in After Effects CS4. One is that Composition markers now have all of the same features – including Chapter and Web links along with Flash Cue Point names and parameters – as Layer markers. The other is that these markers can now have a duration assigned to them. This is handy for annotating events that take several frames or seconds, such as a car driving by.

The duration is entered in the Layer Marker or Composition Marker dialog. This dialog opens automatically if you hold Option (Alt) while creating a Layer marker, or it can be opened later by double-clicking an already existing marker. After entering a duration, a small “tail” will be drawn from the marker onward.

Additionally, there is a new Center in View command in CS4. Select a layer and choose Layer > Transform > Center in View to have its Position altered to be centered in the Comp viewer. This is handy for retrieving layers that get “lost” on the pasteboard after reducing the size of a comp, or that otherwise have been accidentally placed out of view. The shortcut is Command+Home (Control+Home).



Marker duration is entered in the normal marker details dialog (above). This duration is visible as a thin white line drawn from the marker's head to the right. In the second figure (below), the second marker has a duration, while the first does not.



7 Trimming

No changes in CS4.

8 Motion Blur and More

No changes in CS4.

9 Blending Modes

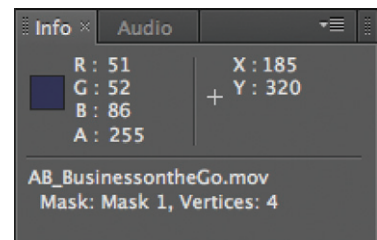
There are no changes to the modes that can be applied to entire layers. However, there have been some additions to the modes that can be used between shapes inside Shape Layers, which we'll discuss when we get to Chapter 30.

10 All about Masking

There is one small change in After Effects CS4: When creating or editing a mask, the Window > Info panel will display how many vertices there are in the mask (right).

11 All about Track Mattes

No changes in CS4.

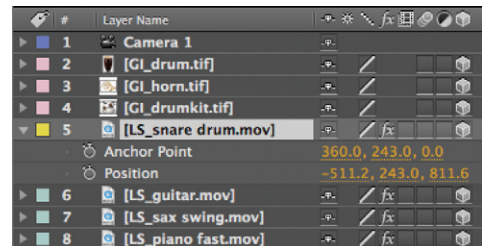


12 Stencils and the “T”

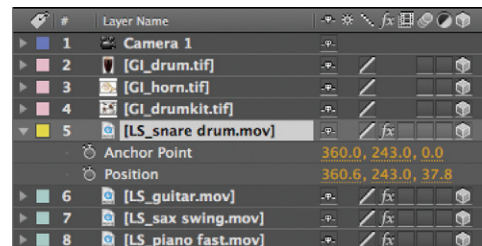
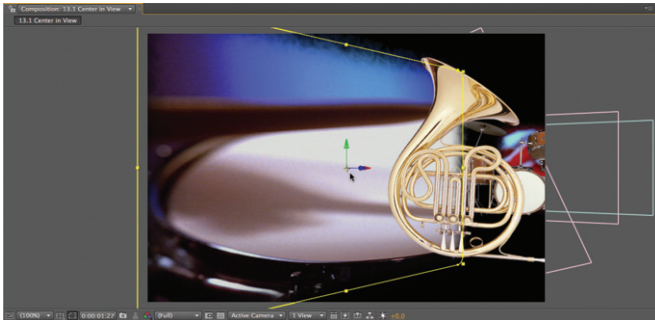
No changes in CS4.

13 3D Space

As we mentioned back in the section on Chapter 6, there is a new Center in View command in CS4. Select a layer and choose Layer > Transform > Center in View to have its Position altered to be centered in the Comp viewer. The shortcut is Command+Home (Control+Home). Note that it works in the alternate orthogonal and Custom Views in addition to the normal Camera views.



If you have a layer that is off-screen and that you wish to center (above left), use Layer > Transform > Center in View to move it (below left). Its Position value will update (see Timeline above and below). Video courtesy Lee Stranahan; stills courtesy Getty Images.



This comes in handy when you have been manipulating a 3D camera, and it is now pointing in a direction where you have “lost” a layer. When executing this command, the layer’s X and Y Position values will be altered so that it is centered in the Comp viewer, and its Z Position will be altered so that it appears at approximately 100% of normal size (in other words, the same size it would be if it was a 2D layer centered in the current view, give or take some potential perspective distortion). Experiment with this in the comp **Chapter 13 > [13.1 Center in View]**.

There is one additional change that comes in handy when managing a multiple-view layout for a 3D composition: If you click on one of the views in the Comp panel using the middle mouse button, it will not accidentally deselect the currently selected layer or select a different one.

TIP

Look at Layers

The opposite of the new Center in View command are the existing View > Look at Selected Layers and View > Look at All Layers commands. Instead of moving a layer to be visible to the camera, these commands move the camera or viewport to look at a layer.

14 Cameras

3D cameras have received a few nice enhancements in After Effects CS4, including integration with a major new feature in Photoshop CS4 Extended.

Unified Camera Tool

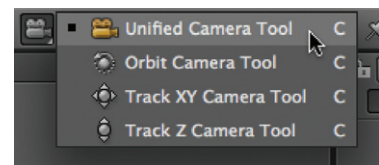
One of the most requested, small-but-important features in After Effects CS4 is the addition of the Unified Camera tool. Previously, you had to keep pressing C to toggle between the Orbit, Track XY, and Track Z Camera tools. If you have a three-button mouse, you can now instead select the Unified Camera tool and use your three mouse buttons to quickly switch between those three tools: Just click (with the appropriate button) and drag. If you are in a Camera view, this will edit the Camera's parameters; the Unified Camera tool can also be used to quickly move around the alternate orthogonal and Custom Views. Go ahead and try it in **Chapter 14 > [14.1 Unified Camera Tool]**.



By selecting the Unified Camera tool (below), you can use a three-button mouse rather than the C key to more quickly switch between the Orbit, Track XY, and Track Z Camera tools (above). Footage courtesy Digital Vision.

Camera Settings

Another small change that will be a relief to some power users is that the default units in the Camera Settings dialog now defaults to millimeters rather than pixels. This corresponds more closely with real camera measurements. Note that the Zoom setting in the Timeline panel is still in pixels, as this relates to the Position and Anchor Point parameters of a camera that are also in pixels.



Photoshop 3D Layers

In CMG4, we demonstrated on pages 254 and 255 how to use Vanishing Point Exchange to convert a photograph in Photoshop into a simple 3D set. Creative Suite 4 offers another way to use Photoshop and After Effects together in 3D: This time, by importing a 3D model into Photoshop and then animating it in After Effects. There are some limitations to this technique, but it also offers some interesting possibilities:

Step 1: In Photoshop CS4 Extended, select the menu item File > New. In the Preset popup, choose Film & Video. Then in the Size popup, select either NTSC D1 Square Pixel or PAL D1 Square Pixel depending on the prevalent format in your country. Click OK. (If you don't have Photoshop CS4 Extended, jump ahead to Step 9 and use our already prepared Photoshop 3D Layer file.)

FACTOID

Painting in 3D

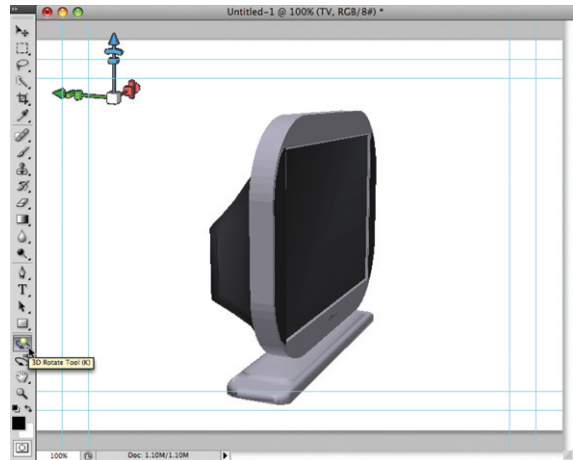
Using Photoshop to paint on 3D models is beyond the scope of this bonus chapter. However, there are some tutorials available on the web, such as this one on Photoshop Cafe: www.photoshopcafe.com/cs4/3D.htm. You can also search the Photoshop CS4 online Help file.

Step 2: Select 3D > New Layer from 3D File. Navigate to the **CMG4CS4 Project > CS4_Chapter Sources** folder that came with this bonus chapter, select **TV.3DS**, and click Open. After a pause, a stylized TV monitor will appear in the middle of your new document. Select the 3D Rotate tool from along the toolbar on the left, then click and drag in your document window to move around your 3D model.

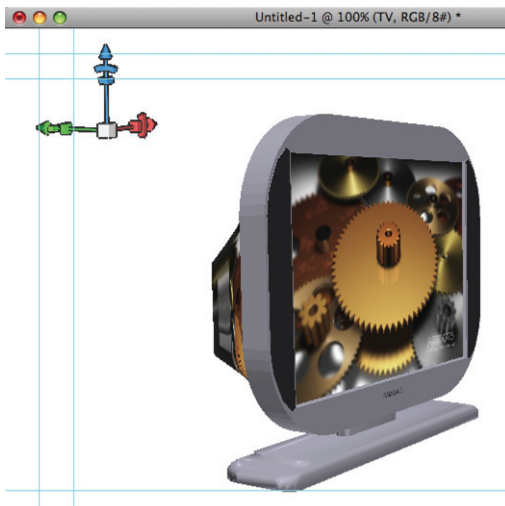
Step 3: Set Window > Workspace to Advanced 3D. The 3D and Layers panels will appear along the right side of your screen. The 3D panel makes it possible for you to modify the “materials” (surface color and other characteristics) originally assigned to the model.

Step 4: In the 3D panel, look under the group **Box01** and select the texture layer **N08_Default**. This is the material the model’s creator assigned to the TV’s screen. In the bottom half of the 3D panel, click on the color swatch for Diffuse and choose a different color. After a pause, you will see the 3D model’s screen update, as well as any other surface that has the material **N08_Default** applied. Change the color to black, and click OK.

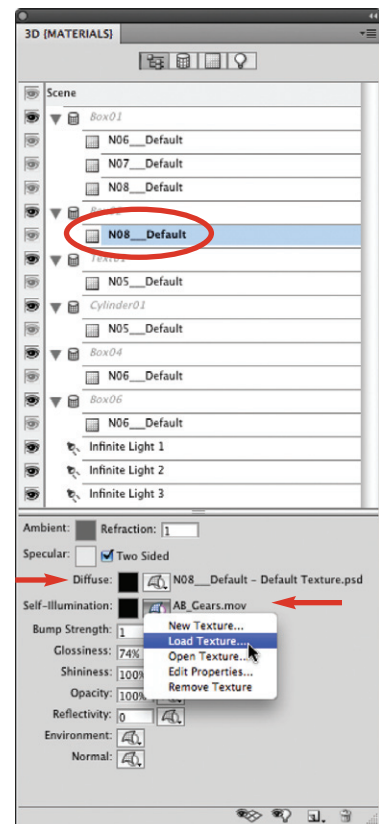
Step 5: TV and monitor screens project light. To assign an image to the screen to be projected, click on the popup menu to the right of the Self-Illumination color swatch, and select Load Texture. In the Open dialog that appears, you can select any image of your choosing, or even a QuickTime movie! Navigate to the **SOURCES > Movies** folder that came from your CMG4 disc, and select one of the files in there such as **AB_Gears.mov**. Click Open. If a pixel aspect correction dialog appears, click Yes. The gears movie will now appear on the TV’s screen.



Step 2: After importing a 3D model into Photoshop CS4 Extended, you can manipulate it in 3D space. Model courtesy Wone Stone and 3dvia.com through Creative Commons License 2.5.



Step 5: In Photoshop’s 3D panel, edit the texture **N08_Default** (right) by setting its Diffuse color to black, and load your own image or movie as the Self-Illumination texture (left). Footage courtesy Artbeats/Gears.



Step 6: Unfortunately, the same texture has been applied to both the screen and the back of this TV model! Note that you are somewhat at the mercy of the model's creator when using this technique. Fortunately, we don't really need the piece that makes up the back of the TV. So in the 3D panel, disable the group **Box02** by clicking on the eyeball to its left.

Step 7: Did you notice that the TV's outlines are rather jagged? That's because the default render quality for the model is set to Draft in order to make Photoshop more responsive. To improve the appearance of the model, in the 3D panel select the master group named **Scene**. Then in the bottom part of the panel, set the Anti-Alias popup to Better.

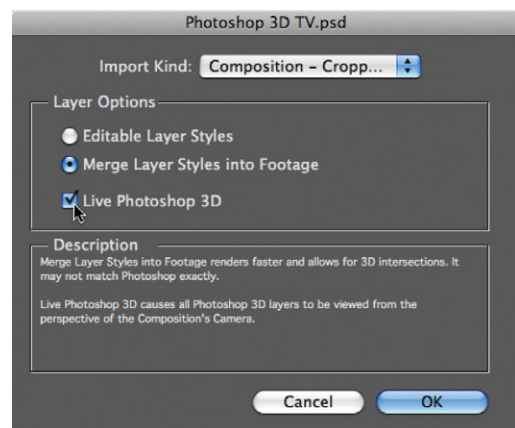
Step 8: Select File > Save As. Before you click Save, make sure that the Format popup in the Save dialog is set to Photoshop and that Layers is enabled. If a Photoshop Format Options dialog opens after clicking Save, enable Maximize Compatibility and click OK.

Step 9: Back in After Effects CS4, select the **Chapter 14 – Cameras** folder in the Project panel. Then choose the menu item File > Import > File and select the PSD file you saved above. (Our version is saved in the **CS4_Chapter Sources** folder as **Photoshop 3D TV.psd**.) After clicking Open, a second dialog will appear. Make sure that the Import Kind popup is set to Composition – Cropped Layers, and that the Live Photoshop 3D option is enabled. Then click OK.

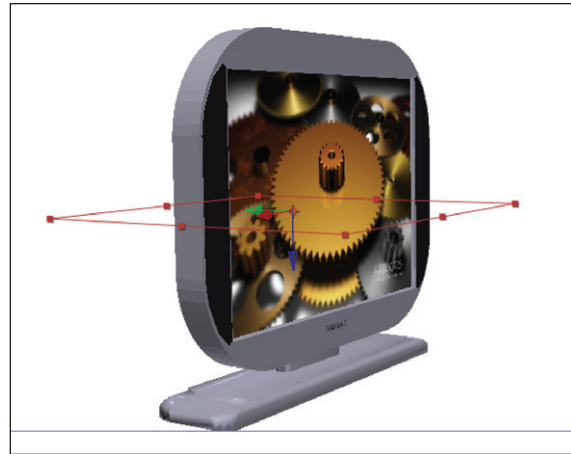
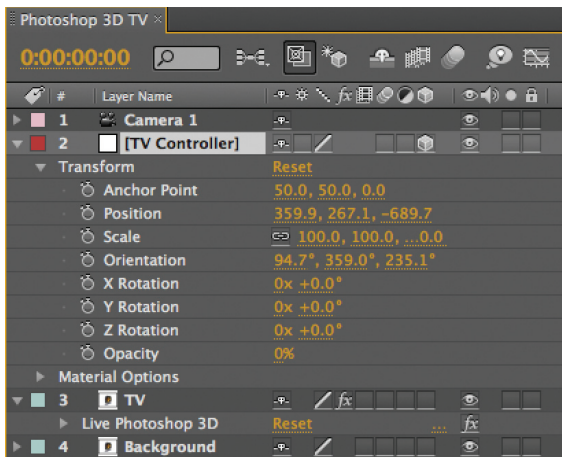
Two items will be created in the Project panel: a folder and a composition named after your file. (Our version is [14.2 Live Photoshop 3D].) Double-click this comp to open it. If you find the guides distracting, disable View > Show Guides.

Step 10: In the Timeline panel, you will see four layers. Starting at the bottom:

- **Background** is a white solid filling the frame; you can turn off its Video switch or delete it altogether.
- **TV** is the layer that contains a special Live Photoshop 3D effect that is rendering the 3D model (select this layer and press F3 to see it in the Effect Controls panel). You can apply additional effects to this layer, as well as alter its Opacity. If you applied a movie as a texture to the TV screen, the layer's duration will be truncated as necessary to match. Move the current time indicator and note how the image updates.
- **TV Controller** is a null object that controls the position and orientation of the layer. Twirl it open to reveal its Transform properties; these are what you should edit and keyframe to move the 3D model. (You can turn off its Video switch – the eyeball icon – to hide its outline in the Comp panel.)
- **Camera 1** is a normal After Effects 3D camera. Use the Camera Tools to move the camera around your 3D model.



Step 9: When importing a PSD file with a 3D layer into After Effects CS4, make sure that you import as a composition, and that Live Photoshop 3D is enabled.



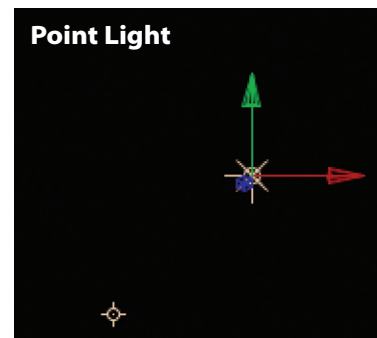
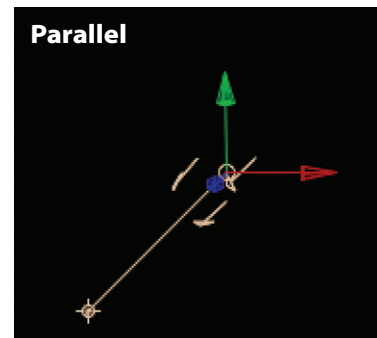
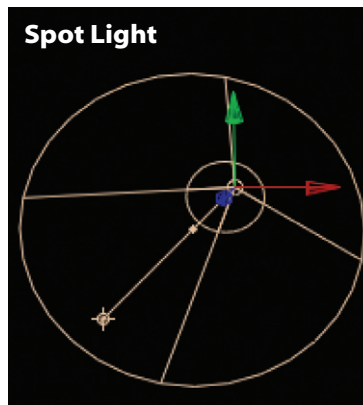
This is a lot of fun. But it must be noted that there are also shortcomings with the current implementation of Live Photoshop 3D, including:

- The 3D model does not react to 3D lights created in After Effects, nor with other 3D layers (no intersections, no shadows, et cetera).
- You cannot assign After Effects layers as textures to your 3D model, nor animate those textures from inside After Effects.
- Any changes to the 3D model – including changing its render quality settings – must be done back in Photoshop. Select the layer with the Live Photoshop 3D effect applied (TV in this case), choose Edit > Edit Original to re-open it in Photoshop, make your changes, save, and return to After Effects.

15 Lighting in 3D

3D lighting received only minor updates in After Effects CS4. For example, each Light Type now has its own icon in the Composition panel; previously, lights looked very similar except for the cone wireframe on a Spot light.

Additionally, the new keyboard shortcuts mentioned back in Chapter 3 to alter a layer's Opacity may also be used to alter a light's Intensity. Hold Control+Option (Control+Alt) and use the + and – keys on the numeric keypad to increase or decrease Opacity in 1% increments. Add the Shift key to jump by 10% increments. (Again, that's not a typo; the Mac keyboard shortcut really is Control+Option, not Command+Option.)



16 Parenting Skills

No changes in CS4.

17 Nesting Compositions

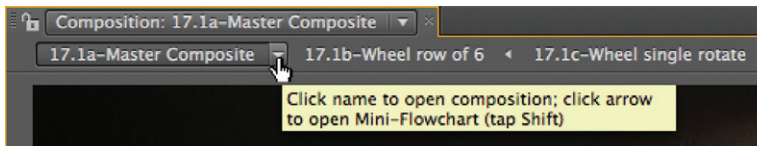
After Effects CS4 sports several very useful enhancements for navigating chains of nested compositions: the Composition Navigator, the Mini-Flowchart, and expanded Edit This/Look At That (ETLAT) functionality. Twirl open the **Chapter 17 – Nesting Compositions** folder in the **CMGCS4.aep** project, and have fun exploring these features.

Composition Navigator and Mini-Flowchart

The Composition Navigator is a new user interface element that has been added to the top of the Composition panel. Before you proceed, first close any previously opened comps by selecting **Close All** from the **Comp** panel's dropdown menu.

Step 1: Open the comp [17.1a-Master Composite]. Look along the top of the Composition panel, just above the image area: You will see a string of comp names. These compositions are nested into each other.

Step 2: Click on the middle comp's name in the Composition Navigator. This comp will open. Click on the third comp in the chain to open it. (If the chain is too long to be displayed along the top of the Comp panel, you will see “...” at the left or right edge of the chain; click on the ... or use your mouse's scroll wheel to navigate the entire chain.)



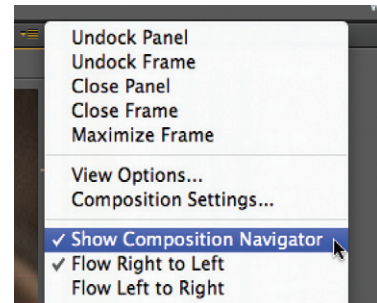
A shortcoming of the Composition Navigator is that it shows just one “thread” of a chain of nested comps. If there are more than two compositions nested into the currently forward comp, After Effects displays the name you opened most recently.

Step 3: Click on the Composition Navigator button for [17.1a-Master Composite] to bring it forward again. Then click on the arrow to the right of its name in the Composition Navigator: The Mini-Flowchart will open. This shows all of the compositions connected to the currently selected comp. Click on one of the arrows along the right edge of the Mini-Flowchart to see the full extent of a specific branch of the comp chain. Click on a comp's name to open it. Have fun experimenting with using the Mini-Flowchart to navigate up and down these comp chains.

Step 4: The Mini-Flowchart opens centered on the mouse cursor's current location. To open the Mini-Flowchart somewhere other than the top of the Comp panel, make sure either the Comp or Timeline panel is

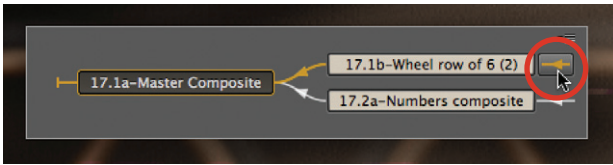
TIP

Show Composition Navigator

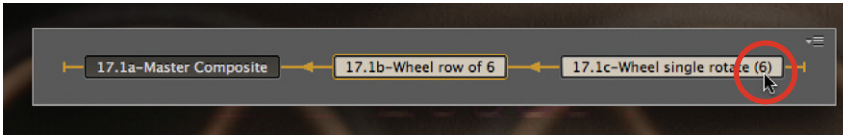


If the Composition Navigator is not visible along the top of the Composition panel, click on the options arrow in the upper right corner of the Comp panel and enable **Show Composition Navigator** (above). Note that you can also use this menu to select which way the chains of comps flow in the navigator.

The Composition Navigator is displayed along the top of the Comp panel. Click on a comp's name to jump directly to it, or click on the arrow to the right of a comp's name to open the more complete Mini-Flowchart.



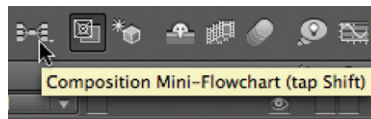
When there are multiple nested comps connected to the current composition, you can click on the path arrow along the edge of the Mini-Flowchart (left) to reveal that chain's full path (below). When a comp is nested more than once into another comp, the number of times it is nested is displayed in parentheses after the comp's name (circled in red below).



forward, position your mouse, then tap the Shift key to open the Mini-Flowchart. Clicking anywhere outside the flowchart closes it without changing which comp is currently forward.

There are two additional changes between CS3 and CS4 that affect how you navigate nested compositions:

- In the Timeline panel, the Open Parent Comp button has been replaced with a button that opens the Mini-Flowchart (right).



- Double-clicking a nested comp in the Timeline now opens the nested comp. Previously, it opened the Layer panel for the nested comp. To open the Layer panel instead, hold Option (Alt) when double-clicking a layer that is a nested comp.

TIP

Most Recent Comp

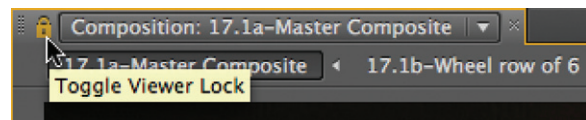
To open the most recently active nested composition without going through the Mini-Flowchart, hold Shift and tap Escape. Repeat to return to the previous comp.

Edit This, Look At That

Enhancements have also been made to the “Edit This, Look At That” (ETLAT) behavior in After Effects CS4. Previously, you could lock the Effect Controls panel of a layer used in one comp, then bring another comp forward. This allowed you to edit an effect's settings inside a nested comp while viewing the results in a downstream comp. As of CS4, you can now also lock the Comp panel for a downstream comp, then edit layers in the Timeline panel for a nested comp.

We know – that's a confusing statement to read. It's much easier to try it out for yourself:

Step 1: Continuing from the prior exercise, make sure both the [17.1a-Master Composite] and [17.1c-Wheel single rotate] comps are open in the Timeline panel.



Step 2: Bring [17.1a-Master Composite] forward and click on its lock icon to the left of its name along the top of the Comp panel. The lock will turn yellow.

Click on the lock icon in the Comp panel to always view this comp while exploring the timelines of nested compositions.

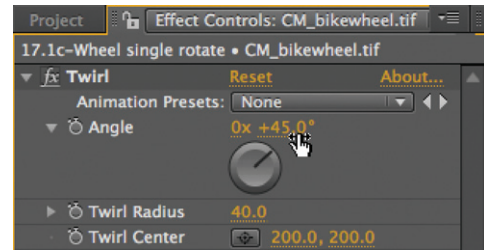
Step 3: Select the tab in the Timeline panel for the nested comp [17.1c-Wheel single rotate]. Its timeline will come forward, but the Comp viewer for [17.1a-Master Composite] will still be displayed.

Step 4: In the Timeline panel for [17.1c-Wheel single rotate], select the layer **CM_bikelayer.tif**. This one layer is replicated numerous times in the comps downstream. Apply Effect > Distort > Twirl, and increase its Angle in the Effect Controls panel. When you release the mouse, in the Comp viewer you will see that all of the wheels will have their spokes twirled.

Step 5: Click on the tab for [17.1a-Master Composite] to bring its Timeline panel forward again. Then tap the Shift key to open the Mini-Flowchart. Select [17.2a-Numbers composite] to open its Timeline. Select any of the first three layers and use the cursor keys to nudge their position in this nested comp. The Comp viewer will update to show their new position in context with the bike wheels in the master comp.

Step 6: To return to normal behavior, click on the lock icon in the Comp panel to unlock [17.1a-Master Composite]. The comp you were working in – [17.2a-Numbers composite] – will now be displayed in the Comp viewer.

This trick will save you from having to open two Timeline and Comp panels while working with tricky chains of nested comps. Note that in our example we opened a series of nested comps, locked the master comp, then used the tabs along the top of the Timeline panel to bring forward the timeline we wished to edit. However, after you lock the master comp, if you then switch to another comp using the Composition Navigator along the top of the Comp panel, the newly selected comp will then become the “locked” comp. Another variation occurs if you open a composition from the Project panel when one comp is locked: The new comp will open in a new Comp viewer docked inside the same frame (try this, and notice the additional tab at the top of the Comp panel). Even if a comp is already open, double-clicking it in the Project panel will open it in a new Comp viewer. So if you like the original behavior, be sure to bring a comp forward by clicking its tab in the Timeline panel only.



With the master comp’s viewer locked, you can edit layers in nested compositions (above) while viewing the result in the master comp (below). You can even RAM Preview while a nested comp is forward; the master comp is what will be rendered. Background footage courtesy Artbeats Digital Biz and Liquid Ambience.



18 Precomposing

No changes in CS4.

19 Collapsing Transformations

No changes in CS4.

20 Textacy

There were two small but nice additions to the text capabilities in After Effects in version CS4:

Text to Masks or Shapes

In After Effects 7, you could convert a text layer to a solid that contained a series of masks that corresponded to the characters in the text. This allowed you to animate the individual vertices of the character shapes.

In After Effects CS3 – where Shape Layers were introduced – this featured changed so that instead of a solid with masks, a shape layer was created with a series of shape paths that corresponded to the individual characters. (Some of the fun you can have with this feature is demonstrated in CMG4 in Chapter 30, page 492.)

In After Effects CS4, you now have the option to create either solids with masks or to create shape layers. Select a text layer (such as the first layer in **Chapter 20 > [20.1-Create Outlines]**), choose either **Layer > Create Shapes from Text** or **Layer > Create Masks from Text**, and have fun animating the shapes of the individual characters. We personally prefer the Shapes option as more of the styling of the original text (such as its stroke) remains intact. On the other hand, the Masks option allows you to apply effects that use mask shapes such as Audio Waveform, Scribble, Vegas, and Stroke. (Either type of path can also be copied and pasted as a motion path to Position or Effect Point properties.)

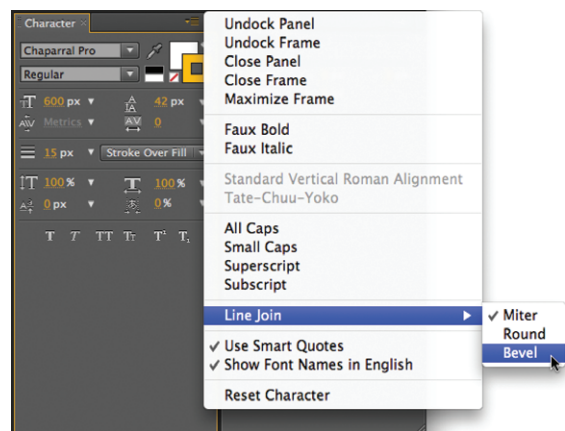
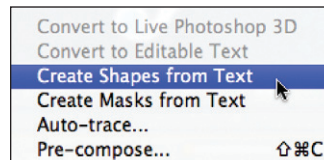
New Stroke Options

Shape Layers enjoy a variety of “line join” options for their strokes. These define what happens when an outline hits a corner. In After Effects CS4, text strokes now have the same options.

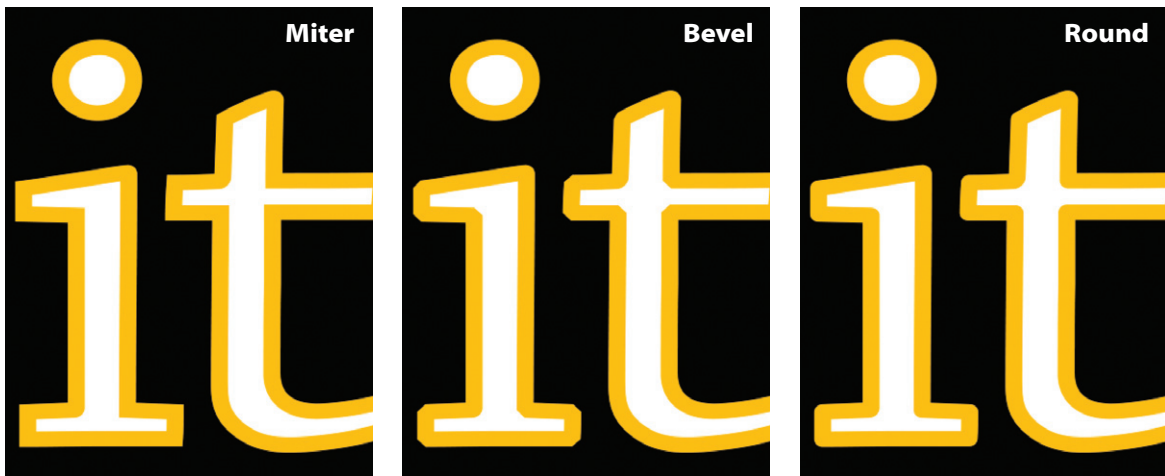
Open **Chapter 20 > [20.2 Text Stroke]**. Note that the text outlines currently have very squared-off edges, both inside and outside the characters. Select the text layer **miter**, and open **Window > Character**. Click on the options arrow in the upper right corner of the Character panel and select the menu option **Line Join**: It is currently set to miter, which is the default. Choose the option **Line Join > Bevel**, and the squared-



In After Effects CS4, text can be converted to either Shape Layers or mask shapes applied to a white solid (left). The Shapes option retains the original color and stroke of the text (above) plus allows you to apply Shape Effects (Chapter 30). Footage courtesy Artbeats/Ocean Water Effects.



Click on the Options menu for the Character palette to control what happens to text strokes at sharp corners.



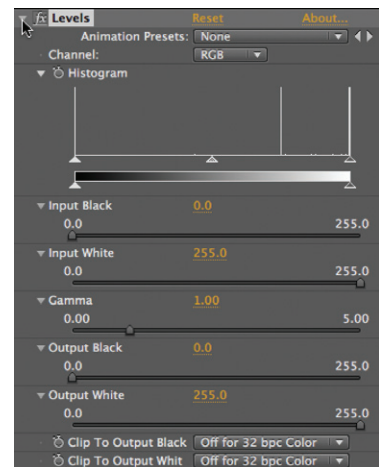
off edges will gain an extra “cut” to them. Choose the option > Round, and they will now have a soft rounding applied.

The three choices are Miter (left), Bevel (center), and Round (right).

21 Applying and Using Effects

After Effects CS4 offers a few minor updates to the way you can use effects:

- The new shortcut key FF (two Fs in quick succession) reveals missing effects in the current composition's Timeline panel. This will be a huge help for those who open archived projects (or projects inherited from others), get the dreaded message that some third-party effects are missing, and have no idea which layers use those effects.
- Previously, pressing Command (Control) and clicking on the twirly for a layer in the Timeline panel revealed all of its parameters as well as the contents of all of its parameter subgroups. You can now do the same for an effect in the Effect Controls panel: Hold Command (Control) and click an effect's twirly, and its parameter subgroups will open as well.
- Adjustment layers have a default label color, which makes it easier to identify them or select them by label group. The color assigned can be changed in Preferences > Label Defaults and > Label Colors.
- There is now a keyboard shortcut to create a Layer > New > Adjustment Layer: Command+Option+Y (Control+Alt+Y).



Command+click (Control+click) on an effect's twirly to reveal all of its parameters in the Effect Controls panel.

22 Effects Roundup Overview

After Effects CS4 gains three new effects, which are discussed in the next section. Several of the previous effects have also been updated to work in 32 bit per channel floating point mode – most notably, all of the 3D Channel effects (covered in Bonus Chapter 38B on CMG4's DVD-ROM).

If you are interested in rolling your own effects, After Effects CS4 can also load and run plug-ins written using the new Pixel Bender toolkit. Pixel Bender is Adobe's own language for creating effects that can function on either the GPU (graphics processing unit on your video card) or your computer's normal CPU. Pixel Bender effects can also be run in other Adobe applications including Flash Player and (eventually) Photoshop.



The Pixel Bender Toolkit (including documentation and demo files) is included with After Effects CS4. On the Mac, it is installed in **Applications > Utilities > Adobe Utilities**; on Windows it is in **Program Files\Adobe\Adobe Utilities**. (You can also find information on labs.adobe.com/technologies/pixelbender.) It is hoped that individuals and third parties will write effects using this language and make them available to other users.

22B Effects Roundup (Bonus Chapter PDF on DVD)

Three new effects have been added in After Effects CS4: Cartoon, Bilateral Blur, and Turbulent Noise. All are GPU-accelerated and based on the technology introduced in Adobe's Pixel Bender language (see the previous section for more on Pixel Bender). Examples of all of these effects can be found inside the **Chapter 22B** folder.

Cartoon

The Cartoon effect re-creates that cartoon-from-live-action look that's been popular in some commercials and movies during the past few years. Cartoon is relatively easy to use with few parameters to learn, plus it is GPU-accelerated so that it's very responsive.

Cartoon can be thought of as working in three steps:

- Smoothing the image to remove the details that pegs an image as being "realistic."
- Finding the edges between the remaining details and stroking them to help separate the areas of color.
- Filling in colors and gradients between the above edges.

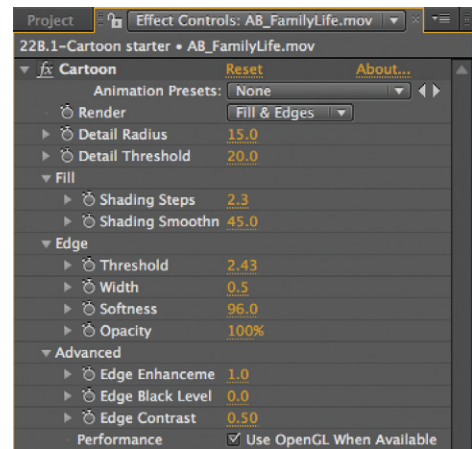


Open the comp [22B.1-Cartoon starter] and try it yourself:

Step 1: Select the layer AB_FamilyLife.mov and apply Effect > Stylize > Cartoon. The initial results may look a bit coarse – but you’re not reading this just to learn how to use the default settings...

Step 2: In the Effect Controls panel, hold down the Command (Control) key and slowly scrub the value for Fill > Shading Steps to the left. Lower Shading Steps values result in a starker, less realistic, more posterized look; the sweet spot is between 2 and 3.

Step 3: Decrease Fill > Shading Smoothness. On this particular clip, you will go through some interesting stylized artistic looks in the 60s range until you reach some Sunday morning-comics looks in the 50s range. Other clips will respond differently, but in general lower values result in posterization, while higher values result in more realism.



Cartoon has relatively few controls, making it easier to master.



Step 4: Increase Detail Threshold to add a blurred look to the image. At extreme values, all details in the faces will disappear. Use Detail Radius to fine-tune the result.

Step 5: Decrease Edge > Width to use thinner lines to define the edges between fields of color. Edge > Threshold decides how many lines there are. If you prefer a “softer pencil” look, increase Edge > Softness; then slowly increase Edge > Width to recover your lines.

These controls interact with each other; feel free to go back and re-tweak previous settings to further alter the look. For example, go back and increase Fill > Shading Steps at this point to get some detail back in the final image.

Cartoon may appear to initially have little effect (above) on the original footage (above left). However, just a few minutes of experimentation can yield bright, bold looks (below). Footage courtesy Artbeats/Family Life.



If you're having trouble coming up with a look you like, Cartoon is a perfect example of an effect that works well with Brainstorm (Chapter 24) to explore new looks:

Step 6: Select Cartoon in the Effect Controls panel. Then click on the Brainstorm icon in the Timeline panel (which looks like a light bulb in After Effects CS4, compared with the storm cloud in CS3), and let After Effects generate some variations for you.

Step 7: If you chose a variation created by Brainstorm, make sure you return to the Cartoon effect in the Effect Controls panel, twirl open the Advanced section, and if necessary re-enable Use OpenGL When Available: The random functions in Brainstorm may have turned it off.

Like any effect, Cartoon often looks best when combined with other effects. We regularly place Color Correction > Levels before it to adjust the brightness of the image to be processed by Cartoon, then follow it with an effect such as Color Correction > Hue/Saturation to alter the colors in the result. We've done this in [22B.1-Cartoon_final].



Brainstorm (Chapter 24) can help you explore what Cartoon is capable of (above).



Other color correction effects can be used to enhance the contrast and hue of a Cartoon-processed scene (left).

GPU, but Not Multi-Processor

An unfortunate downside of GPU-accelerated effects such as Cartoon is that they are not compatible with multiprocessor rendering. If you are using one of these effects in your current composition chain, only one processor or core will be used for previews and final renders – even if you have Preferences > Multiprocessing > Render Multiple Frames Simultaneously turned on, and even if you have Use OpenGL When Available turned off in an effect such as Cartoon.

TIP

Cartoon Motion

When using Cartoon, lower the comp's frame rate to 12fps (or even 15fps) to better replicate the motion in real cartoons. Enable Composition > Composition Settings > Advanced > Preserve Frame Rate to lock in this slower speed.

Bilateral Blur

Bilateral Blur blurs color information while keeping grayscale information relatively sharp. The result resembles a “smart” blur that preserves edges while blurring smaller details in-between. By default, Bilateral Blur reduces the saturation in an image; enable the Colorize switch to get the color back. The Threshold parameter controls how much detail is retained, while Radius controls how much the rest of the image is blurred.



At higher Radius or Threshold settings, its GPU acceleration really kicks in. On the other hand, if you find yourself using lower settings to get more subtle results, Bilateral Blur can slow down considerably. As a result, Bilateral Blur is perhaps best for creating stylized looks (including creating a variation on the Instant Sex look described on page 2 of Bonus Chapter 22B); if you are in search of more subtle or “corrective” treatments such as removing the wrinkles in a person’s face, stick with the existing Smart Blur effect.

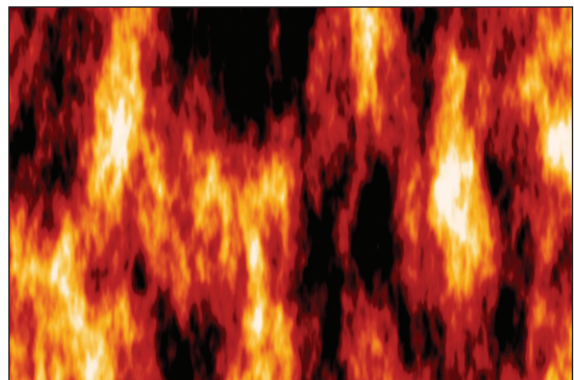
Bilateral Blur smooths out an image while retaining some details. The original image is (left); the processed image is (right). Footage courtesy Harry Marks.

Turbulent Noise

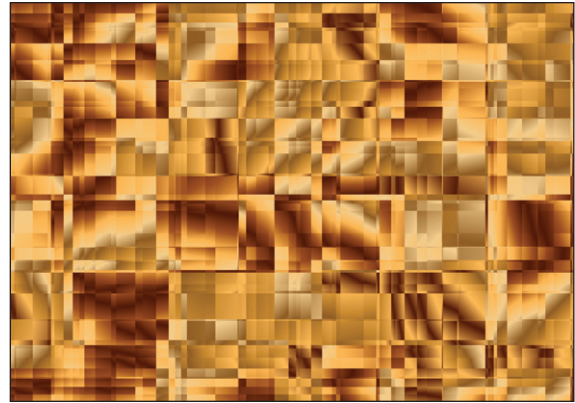
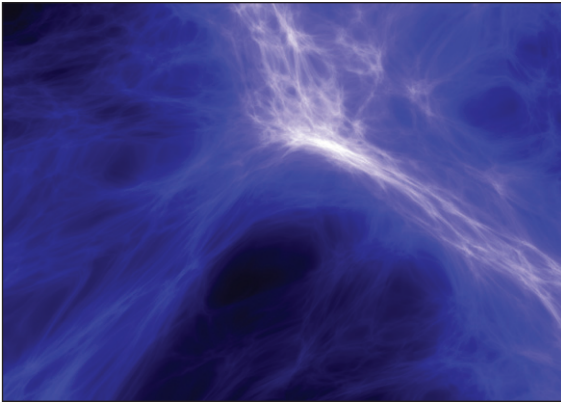
Turbulent Noise is an alternate version of the ever-popular Fractal Noise effect. The problem with Fractal Noise is that it’s slow. Turbulent Noise is GPU-accelerated, so it is *much* faster, making it far more interactive to tweak.

For the most part, you can take any recipes you’ve developed or learned for Fractal Noise and apply them to Turbulent Noise, as most of the parameters are the same. However, there are a few important differences:

- Fractal Noise can loop (by enabling its Evolution Options > Cycle Evolution switch); Turbulent Noise cannot.



Like Fractal Noise, Turbulent Noise can be used to generate a wide variety of natural and abstract phenomena. The above image is created in comp [22B.3a].



- Turbulent Noise can initially seem to have less contrast than Fractal Noise. If you are copying a recipe originally developed for Fractal Noise, try doubling Turbulent Noise's Contrast value to get closer to the intended look.
- Turbulent Noise employs a more accurate simulation, resulting in smaller noise features moving more quickly than larger noise features when animated.

The above images were created using Turbulent Noise and are included in example comps [22B.3b] (left) and [22B.3c] (right).

22C Particle Playground

(Bonus Chapter PDF on DVD)

No changes in CS4.

23 Compound Effects

No changes in CS4.

24 Presets and Variations

The only change in After Effects CS4 is that the icon for the Brainstorm switch in the Timeline panel has changed from a storm cloud in CS3 to a light bulb in CS4.



The Brainstorm icon has a new look in CS4.

Obsolete Effects

As of After Effects CS4, some effects have been put into semi-retirement: Basic 3D, Basic Text, Path Text, and Lightning have been moved into a new Obsolete category. Old projects that use them can still be opened, but it is suggested that you no longer use them in new projects. Instead, you can use After Effects' built-in 3D and text engines, as well as the Simulation > Advanced Lightning effect.

25 Color Management

Color management has been improved in After Effects CS4 so that it now recognizes and compensates for the differences between “scene-referred” and “display-referred” color profiles. The short explanation is “Don’t worry – CS4 is merely more accurate now. Leave the option File > Project Settings > Compensate for Scene-referred Profiles enabled when using color management, and in some scenarios your output will now be even more accurate than it was before.” For a longer explanation, read on; these changes affect Photoshop CS4 as well.

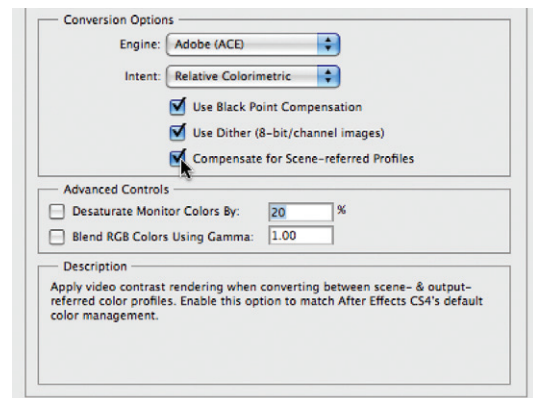
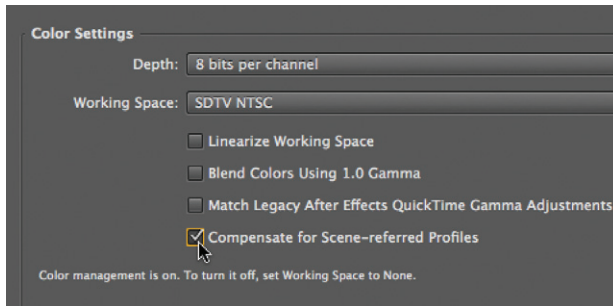


Image States

Some color profiles – such as SDTV, HDTV, Camera Raw, plus many film-based profiles – are based on how an image appeared when it was originally captured, and therefore are known as *scene-referred*. Other color profiles – such as sRGB, Adobe RGB, Apple RGB, SMPTE C, and others – are based on how an image is to be displayed, and are therefore known as *display-referred*.

If you think of a typical video workflow, you shoot footage outdoors in sunlight or with the assistance of additional lighting, and the contrast (or “dynamic range”) between the brightest light and darkest shadow is considerable. However, a typical television does not have nearly the dynamic range available on a set, so the final image will inevitably be displayed with reduced contrast and potentially altered colors. As a result, when you shoot a scene on (for example) a high definition camera, its output – which is in the HDTV Rec. 709 color space – will be “tone mapped” (have its dynamic range reduced) by a high definition television so that the source image can be displayed in its own sRGB color space. A side effect of this is that the image will typically appear darker on TV than it was on the set.

This becomes an issue when viewing HD (and other scene-referred) sources on your computer monitor in After Effects: You would prefer to see it as it would ultimately appear on its corresponding display device (in this case, a high-def TV). To accomplish this in CS3, you would use the View > Simulate Output > HDTV (Rec. 709) option to perform this

By enabling File > Project Settings > Compensate for Scene-referred Profiles (above left), After Effects CS4 will properly translate between color profiles that describe how a footage item was shot versus profiles that describe how a footage item will be displayed. This option also exists in Photoshop CS4 under Edit > Color Settings (above right).

tone mapping. In After Effects CS4, instead you can just enable File > Project Settings > Compensate for Scene-referred Profiles. Note that in CS4, this adjustment will take place automatically regardless of which combination of scene- and display-referred profiles you are using – in CS3, you would need to change the Simulate Output settings to match your viewing format. In either case, HDTV source material will now appear darker on your computer monitor while working with it in After Effects, matching what an HD television would do to the image. An important under-the-hood detail is that the underlying pixel values will *not* be changed, which means you don't have to worry about color shifts in sources passed straight through After Effects.

Mixing Profiles

The second part of this issue comes in combining output-referred source material – such as digital photographs that have already been saved in the output-referred sRGB or Adobe RGB color space – with source material that has a scene-referred profile, such as SDTV or HDTV footage. As these additional sources already exist in an output-referred

FACTOID

Adobe White Paper

Adobe has created a document that further explains the “image state adjustment” that After Effects CS4 performs between scene- and display-referred color profiles. Go to www.adobe.com/go/learn_ae_sceneoutputreferredpaper.



space, unlike your video they do *not* need additional adjustment to compensate for how they will ultimately be displayed (aside from any necessary translation from one output-referred space to another, such as from Adobe RGB to sRGB).

To see this in action, close all previous comps by selecting Close All from the Comp panel's dropdown menu. Then open the File > Project Settings for **CMG4CS4.aep**. Under Color Settings set Working Space to SDTV NTSC, and for now *disable* Compensate for Scene-referred Profiles. Click OK; color management will be enabled, and you will be working in a mode similar to After Effects CS3 with Output Simulation turned off.

Open the comp [25.1-Scene vs. Output Referred]. It contains two sources: **PM_Alex_keyed.tif**, which is keyed video footage that has been assigned a color profile of SDTV NTSC (which is scene-referred), and

In After Effects CS3, video-sourced footage (such as the keyed woman in the foreground here) will be displayed using its scene – rather than output – profile, causing it to appear artificially bright (above left). In CS4, the Compensate for Scene-referred Profiles option will display scene-referred video footage darker, while maintaining output-referred sources such as the background photo here (above right). Woman courtesy Photron.

the still image background **CM_BigMorongo.jpg** that has been assigned a color profile of Adobe RGB (which is output-referred). You might notice that Alex looks a little bright in this composite. That's partially because you are viewing her as she was shot on the set. In a normal broadcast chain, a television set would display her darker than that.

Re-open File > Project Settings, and enable Compensate for Scene-referred Profiles. Click OK, and now Alex will appear darker in the Comp panel: After Effects is compensating for how she will appear to a viewer on a properly calibrated television set (in this standard definition case, one that conforms to the SMPTE C color specification).

Why didn't the background photograph get darker as well? Because it is already output-referred, meaning it has been pre-compensated for how it will appear when displayed. You don't want After Effects to throw a second output compensation on top of that; the result would be wrong. Instead, all After Effects has to do in this situation is translate the source's Adobe RGB color space into the desired output space.

Yes, this is a confusing subject – but it is an important issue, and one that After Effects CS4 is taking into account for you automatically (as long as you have the Project Settings option to Compensate for Scene-referred Profiles enabled!). In addition to the SDTV and HDTV cases, this scene- versus output-referred compensation will also take place for color-managed film projects.

(When you're done with this section, you can set File > Project Settings > Working Space back to None to work through the rest of the exercises in this bonus chapter.)

FACTOID

Taking Stock

The list of film stock color profiles has been updated in After Effects CS4, including the addition of a Universal Camera Film Printing Density profile.

26 Keying

No changes in CS4.

26B Color Difference Keyer

(Bonus Chapter PDF on DVD)

No changes in CS4.

27 Frame Rate Manipulation

This is not a new feature, but a minor errata for CMG4: On page 452 in the sidebar titled *Timewarp*, we mention that the After Effects Timewarp plug-in is based on the Kronos plug-in from The Foundry. Unfortunately, the link we gave to get the documentation from its website no longer works. Instead, go to www.thefoundry.co.uk, and click on Plug-Ins > Final Cut Pro > Furnace. Download the User Guide (under the Support & Training menu in the right column of this page), and jump to page 31 of the PDF (page number 23 in the document) where the Parameters explanation begins. As the parameters in Timewarp are very similar to Kronos, this explanation will give you a good background in how Timewarp works and how to fine-tune it for your particular job.

28 Motion Stabilization

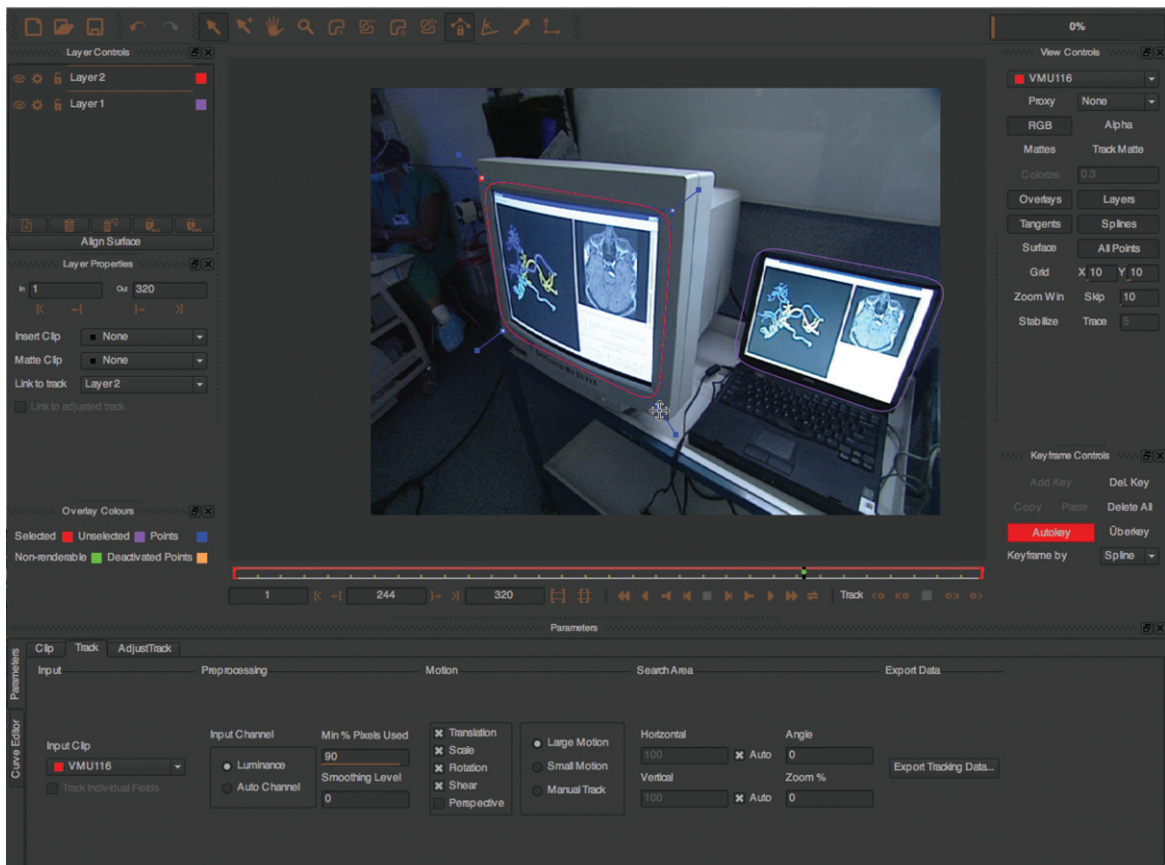
See the comment for Chapter 29 on the inclusion of Mocha for After Effects from Imagineer Systems.

29 Motion Tracking

A major addition in After Effects CS4 is that the stand-alone 2.5D planar tracking and stabilization program Mocha for After Effects from Imagineer Systems is now bundled with CS4. Rather than tracking individual points in an image, with Mocha you define the general outline of a plane of an object. Mocha tracks the shape of this plane to determine its location, size, and orientation. The resulting tracking data is then exported as Corner Pin data, which can be pasted into After Effects. It is resolution independent, and can import Cineon, DPX, TGA, TIF, JPEG, PNG, SGI, and QuickTime files with a depth of 8 or 16 bits per color channel.

Mocha offers many features that the tracker and stabilizer in After Effects does not offer, such as the ability to create hold-out masks to ignore objects that might throw off the track, as well as to define a

Mocha for After Effects – bundled with CS4 – offers tracking and stabilization capabilities that go beyond the point tracker in After Effects. Be warned, however, that it is a stand-alone program with quite a different user interface than After Effects'. Footage courtesy Artbeats/Medical Surgeries.



specific area to paste into, which may not be the same as the area you are tracking (those who have had to offset corner pin tracks in After Effects know what we're talking about). Mocha is also good at following objects that go partially off screen during a track.

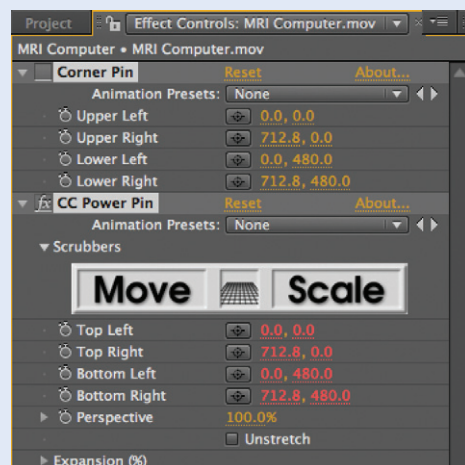
As Mocha is a beast onto itself, teaching it is beyond the scope of this bonus chapter. Note that Mocha's user interface and way of working is quite un-After Effects-like; be prepared to spend some time mastering it. Fortunately, Imagineer offers documentation and video training online: Visit www.imagineersystems.com/products/mocha-AE/ for more information. Here is the general workflow:

- Track or stabilize the footage in Mocha.
- Choose File > Save Tracking Data. In the case of a perspective motion track, make sure the Format popup at the top of the resulting dialog says After Effects Corner Pin Data (*.txt). The window below will then contain the text needed to paste into the corresponding Corner Pin keyframes inside After Effects.
- Click Save and choose where to save your tracking data.
- Open the file you just saved in a text editor, select all of the text, and Copy.
- In After Effects, create a comp with the footage that was tracked, and the footage you wish to composite on top of your tracked scene.
- Select the footage you wish to composite, and apply Effect > Distort > Corner Pin.
- Press Home to ensure that the current time indicator is at 00:00. Paste, and the corner pin data from Mocha will be applied to this layer. This layer will now be distorted correctly – but it may not be centered over the window. If necessary, offset the layer's Anchor Point so that the new footage aligns with the desired location in the tracked scene underneath.

CC Power Pin

When performing a perspective track, some prefer to use Distort > CC Power Pin in place of the normal Adobe Corner Pin effect: It is more flexible, and some feel it resamples the layer with higher quality.

To do so, first use Animation > Apply Animation Preset and choose the file **CMG4CS4 project > mochaPowerPin.ffx**. This applies both the Corner Pin and CC Power Pin effects. Corner Pin is disabled, while CC Power Pin gets its parameters from the Corner Pin effect. Apply your perspective track data to Corner Pin, and CC Power Pin will actually render the layer.



30 Shape Layers

A very nice update to shape layers in After Effects CS4 is the addition of the Wiggle Transform shape effect. This effect randomizes and auto-animates the transform properties – Anchor Point, Position, Scale, and Rotation – of the components of a shape group. It works particularly well in conjunction with the Repeater shape effect. However, there are a couple of things to be aware of when using Wiggle Transform that we'll cover in the next two exercises. Both of these reside inside the Chapter 30 folder in CMG4CS4.aep.

Wiggle Transform

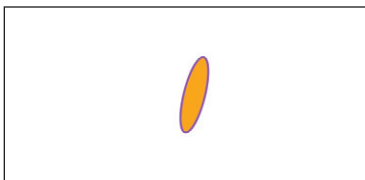
First you will learn how Wiggle Transform works, and what to do if you want to wiggle more than one property.

Step 1: Open [30.1-Wiggle Transform starter]. It contains a single shape layer named **Jellybean**. Your goal is to make **Jellybean** wander automatically around the screen.

Step 2: Twirl down **Jellybean** > Contents to reveal the shape group named Shape 1. Select Shape 1 to ensure your shape effect will do inside this group, and choose Add > Wiggle Transform.

Step 3: Twirl down Wiggle Transform 1 > Transform. All of its transform offsets default to zero. Set Wiggle Transform 1 > Transform > Position to X=300, Y=0 and RAM Preview: The shape will slide back and forth horizontally.

Step 4: Set Wiggle Transform 1 > Transform > Rotation to 1x+0.0°. RAM Preview, and carefully note **Jellybean**'s behavior: As it moves to the left (negative X direction), it rotates counter-clockwise (negative rotation); as it moves to the right (positive X direction), it rotates clockwise (positive rotation).

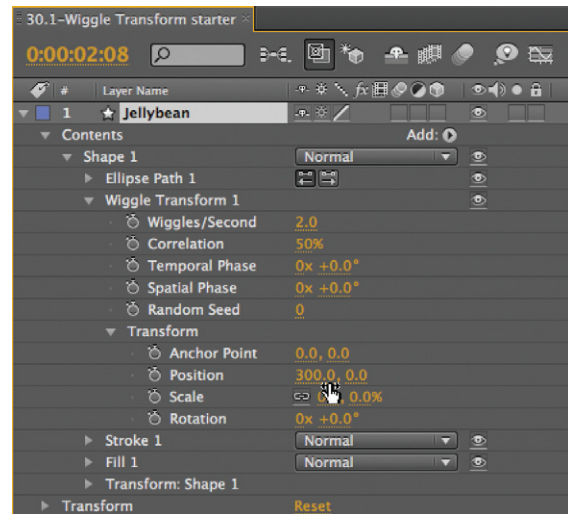


Here is what is going on underneath the hood: Wiggle Transform internally generates a single random value, ranging from -1 to +1. This internal value is then multiplied by the Transform offsets you've entered. If you enter offsets for more than one parameter, they will all change in concert with one another, as they are being driven by the same underlying random value.

FACTOID

32 Bits Per Channel

Shape layers can now be rendered with 32-bit floating point fidelity.



Steps 2–3: Add the Wiggle Transform effect to **Jellybean**'s Shape 1 group, and set its X Position to 300.

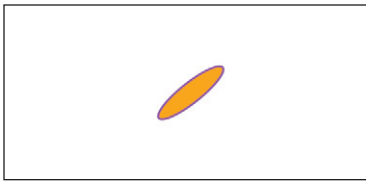
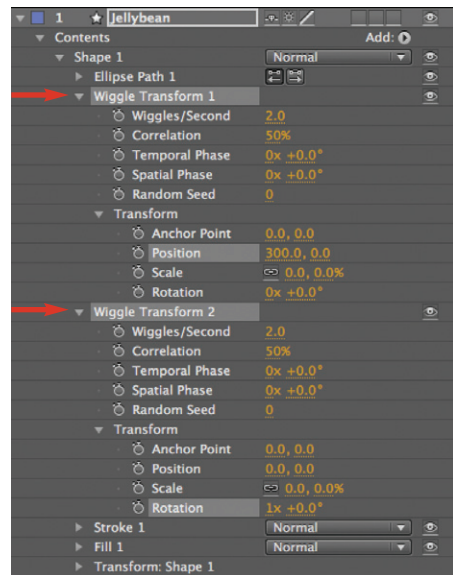
Step 4: When the same Wiggle Transform effect is used to wiggle both Position and Rotation, these parameters move in concert with each other.

What if you want to randomize, say, Position differently than Rotation? That will require more than one Wiggle Transform shape effect:

Step 5: Set Wiggle Transform 1 > Transform > Rotation back to $0x + 0.0^\circ$. Then select Add > Wiggle Transform again. Twirl down Wiggle Transform 2 > Transform, and set Rotation for this second instance of the effect to $1x + 0.0^\circ$. RAM Preview; the rotation will happen independently of the horizontal movement.

Now that you have two Wiggle Transform effects, you have the additional flexibility of setting different speeds (Wiggle/Second) for each instance. Go ahead and experiment; if you get lost, our result is in [30.1-Wiggle Transform_final].

Step 5: By dedicating separate Wiggle Transform shape effects to Position and Rotation (right), these two parameters will now wiggle independently from each other (below).



Repeater + Wiggle Transform

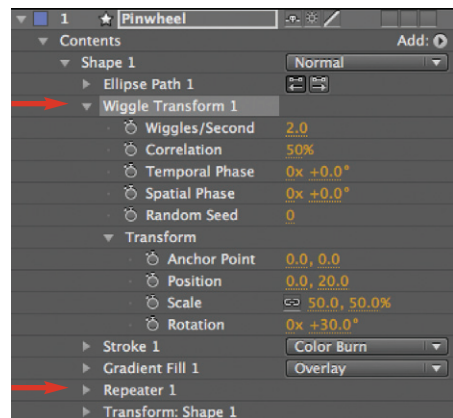
The stacking order of shape operators often has a big impact on the resulting image. This is particularly true with the combination of Wiggle Transform and the Repeater.

Step 1: Open [30.2-Repeater+Wiggle starter], then twirl open Pinwheel > Contents > Shape 1. This shape layer contains a single ellipse shape that has been repeated to create a pinwheel.

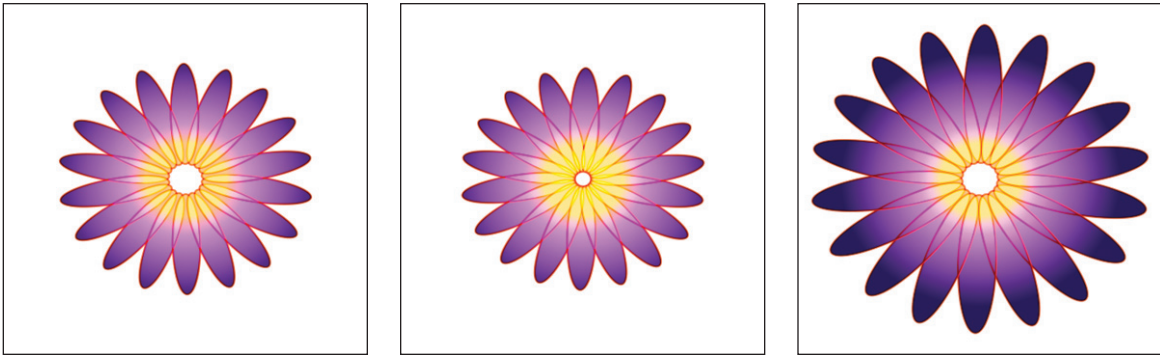
Step 2: Select the group Shape 1 and Add > Wiggle Transform: It will be added to the shape group after Ellipse Path 1 and before Repeater 1.

Step 3: Twirl open Wiggle Transform 1 > Transform and enter some values. The exact numbers don't matter; we used Y Position = 20, Scale = 50% and Rotation = 30° .

RAM Preview: Note that all of the petals in the pinwheel pulse in unison and that the entire pinwheel shape rotates as a whole. This is because you are currently wiggling the transform values for the initial ellipse *before* it is repeated to create multiple shapes.



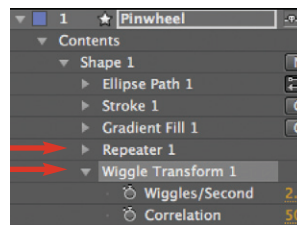
Step 3: When you Add > Wiggle Transform, note that it is placed before Repeater 1.



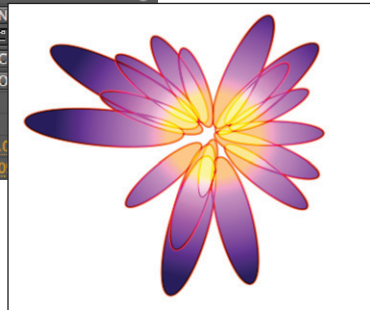
Step 3: When Wiggle Transform is before Repeater, all of the repeated shapes will wiggle in unison.

Step 4: Drag Wiggle Transform down the list so that it is after Repeater 1 and just before Transform: Shape 1. The pinwheel will take on a disheveled appearance!

RAM Preview, and each petal will scale, rotate, and move independently of the other petals. This is because you are first repeating the ellipse to create multiple petals, *then* wiggling the transform of each of those petals. (Wiggle Transform wiggles each component shape of a shape group.)

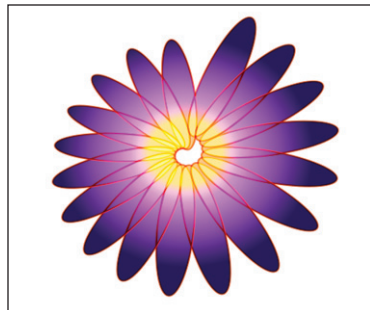


Step 4: When Wiggle Transform is after Repeater (above), each repeated shape is wiggled individually (right).



Step 5: Correlation controls how much each wiggled shape resembles or varies from another, with higher values for Correlation resulting in a higher degree of resemblance. Increase Wiggle Transform 1 > Correlation to 90%. RAM Preview, and note how much more coordinated the actions of the individual petals appear to be. Composition [30.2-Repeater+Wiggle_final] contains two copies of Pinwheel, with low correlation (left) and high correlation (right).

Step 5: Increasing Correlation results in the repeated shapes wiggling in a wave, rather than in a random pattern.



31 Paint and Clone

No changes in CS4.

32 Vector Paint

No changes in CS4.

33 The Puppet Tools

No changes in CS4.

FACTOID

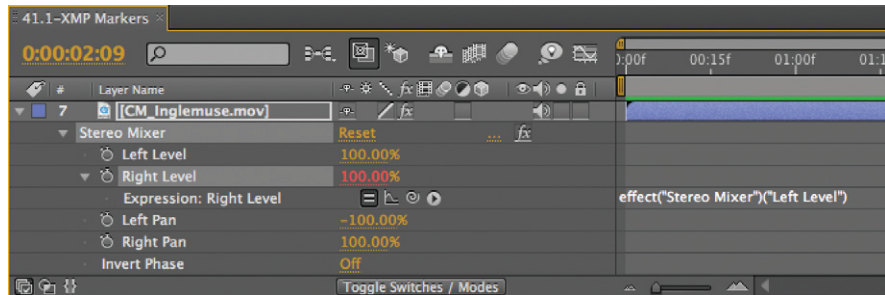
More Modes

In After Effects CS4, shape layers now have a longer list of modes that can be used to blend together shape strokes, fills, and groups. The list of additions includes Linear Burn, Darker Color, Linear Dodge, Lighter Color, Linear Light, Vivid Light, Pin Light, and Hard Mix.

34 Working with Audio

On page 550 of CMG4, we mention in a Gotcha that expressions are not calculated on audio layers while previewing audio. This behavior is much improved in After Effects CS4:

- If you create an expression for a Stereo Mixer effect applied to an audio layer (for example, to make the Right Channel follow the Left Channel), the expression will now be calculated for the audio preview for that layer.



- If you create an expression applied to Levels for an audio layer (for example, to follow a Slider Control to make it easier to adjust or keyframe Levels for multiple layers), that expression will *not* be calculated during an audio preview – at least as of version 9.0.1.

Expressions applied to the Stereo Mixer effect applied to an audio layer will now be calculated for the audio preview.

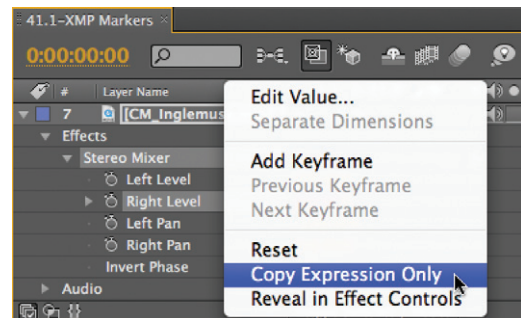
34B Audio Effects

(Bonus Chapter PDF on DVD)

No changes, aside from the comment in the section on Chapter 34 concerning audio previews and expressions applied to the Stereo Mixer effect (in short: It now works).

35 Expressions

In After Effects CS4, context-clicking on a parameter in the Timeline or Effect Controls panel now reveals an option to Copy Expression Only. This makes it easier to copy and paste expressions between layers by allowing you to leave behind the underlying value or any keyframes.



Copy Expression Only allows you to copy the expression without also copying the underlying value.

35B Deeper Modes of Expression

(Bonus Chapter PDF on DVD)

No changes in CS4.

35C Scripting Overview

(Bonus Chapter PDF on DVD)

Scripting continues to evolve in After Effects; refer to the Adobe Scripting Guide (look online at www.adobe.com/devnet/aftereffects/) for the latest information. However, the introduction provided by Bonus Chapter 35C is still valid.

36 Import and Interpret

Several new media formats may be imported into After Effects CS4:

- FLV and F4V (commonly known as “Flash Video”).
- ASND (Adobe Sound Document).
- Sony XDCAM EX.
- The Sony XDCAM HD version of MXF (the Panasonic P2 Op-Atom version was supported as of After Effects 8.0.2).

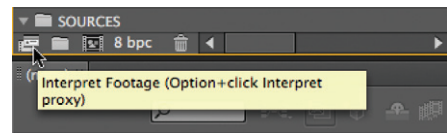
Additionally, a new option has appeared in the Photoshop PSD file import dialog: Live Photoshop 3D. This was demonstrated earlier in the section on Chapter 14.

Interpret Footage Shortcut

An annoying new feature in CS4 is that the keyboard shortcut to open the Interpret Footage dialog for a selected footage item has changed: It is now Command+Shift+G (Control+Shift+G).

Note that pressing the old shortcut of Command+F (Control+F) will instead make the QuickSearch field active (QuickSearch is discussed in the section on Chapter 2). This means if you type Command+F (Control+F) by mistake, first you must click somewhere else to deactivate QuickSearch, then type the correct shortcut.

Knowing that the new shortcut will be hard to remember, Adobe took the nice step of adding an Interpret Footage button to the bottom of the Project panel.

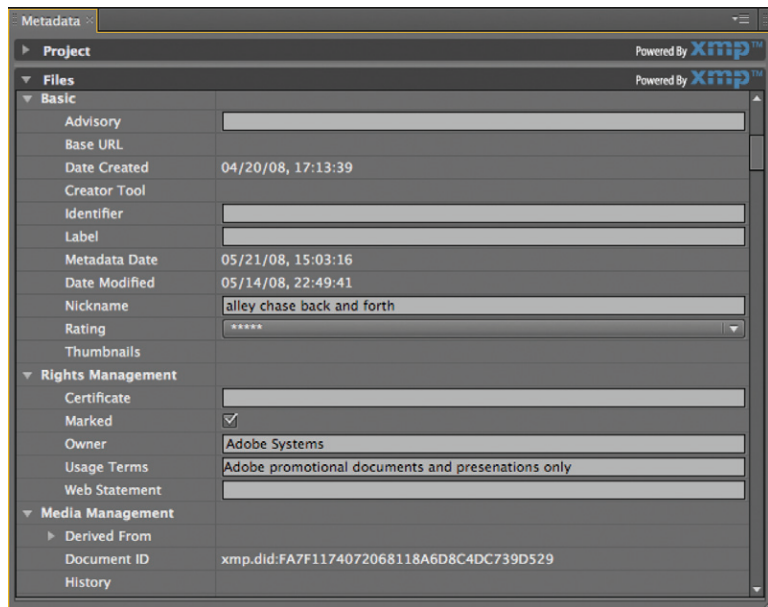


After Effects CS4 now includes a button at the bottom of the Project panel to open the Interpret Footage dialog for a selected footage item.

XMP Metadata

A major feature implemented across several components of the Adobe Creative Suite 4 product line is support for XMP Metadata. Although it will have little direct impact on an individual motion graphics artist (which is our focus), some who manage and work in larger facilities will be very happy to see it.

In broad terms, metadata means additional information that accompanies a file, such as when, where, and how it was shot; copyright information; technical specs (such as camera focal length); job number or work ticket; et cetera. XMP Metadata is accessible by selecting a file and choosing Window > Metadata. You can also



XMP Metadata allows you track information about your assets through your entire production and workflow.

use scripting to access and manipulate metadata. Preference settings for XMP Metadata reside at the bottom of the Media & Disk Cache preference pane.

An example of using metadata to save and re-import comp and layer markers is included in the section on Chapter 41 later in this document.

Improved OpenEXR Support

After Effects CS4 now comes with the ProEXR plug-in set from fnord software (available free for CS3 from www.fnordware.com/ProEXR/). This offers enhanced support of the OpenEXR format commonly used by high-end effects houses. ProEXR's benefits include:

- Support for all the OpenEXR compression options, including B44 compression.
- Output as RGB or Luminance/Chroma channels.
- Retention of EXR color space information.
- Support for both 32-bit and 16-bit floating point.
- Full control over alpha channel processing.

The ProEXR package contains the EXtractoR and IDentifier plug-ins, which allow access to the additional non-image channels in an OpenEXR file – including Object and Material IDs.

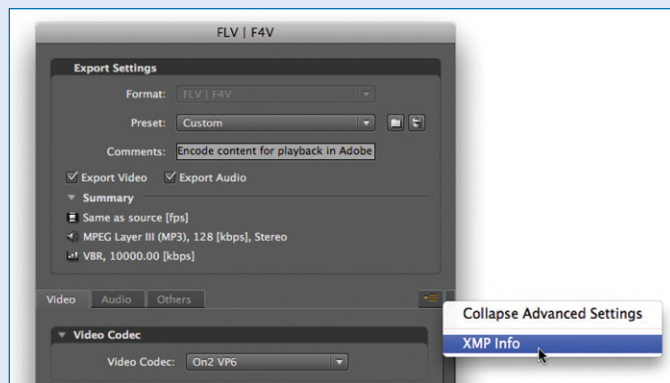
For more information, download the ProEXR PDF manual (www.fnordware.com/ProEXR/ProEXR_Manual.pdf) and jump to the ProEXR in After Effects section, which starts about halfway in.

FLV and F4V Updates

After Effects CS4 has several updates in the area of FLV and F4V web video formats:

- Both FLV and F4V formats can now be imported.
- After Effects can now render F4V media in addition to the previously supported FLV format.
- You can now embed XMP Metadata in FLV and F4V renders. This can be found under the Options menu in the FLV | F4V Export Settings dialog.
- The Filters tab that previously existed in the FLV Export Settings dialog has been removed – you will need to do any pre-processing such as denoising in your final comp as opposed to inside the Output Module.

Also note that you no longer need to bring an FLV file into Flash to test it. Instead, download the Adobe Media Player.



Hidden under the Options menu in the FLV | F4V format options dialog is the ability to add extensive XMP Metadata tags.

37 Integration 101

One of the main initiatives behind Adobe Creative Suite 4 was improving the interoperability between Adobe applications. After Effects CS4 offers the following enhancements:

- Importing Adobe Photoshop CS4 Extended 3D layers (discussed in the section on Chapter 14).
- The ability to convert Photoshop text to either solids with masks or to shape layers (discussed in the section on Chapter 20).
- Exporting XFL projects to Adobe Flash Professional CS4.
- Creating After Effects compositions in Adobe Device Central CS4.
- Improved functionality with Adobe Premiere Pro CS4 and Soundbooth CS4.

We'll discuss those last three in more detail below.

Web Video

The big feature here is the ability to export an After Effects composition as an XFL format project, which can then be opened by Adobe Flash CS4 Professional. These layers may then be trimmed, transformed, or have interactivity added to them within Flash; you may also insert new symbols in-between these layers in Flash.

During export, each After Effects layer is usually rendered to its own FLV movie or PNG sequence that is then used by Flash. Under certain circumstances, your sources may be passed directly through to Flash, along with any 2D transform properties (Scale, Position, Rotation, Opacity) that were altered or keyframed in After Effects. Some of these special circumstances include:

- The underlying footage must employ a format natively used by Flash (such as a PNG or JPEG still image, or an FLV movie or PNG sequence).
- No effects may be added to the layer. Likewise, the layer cannot use a Blending Mode, may not be time stretched, and cannot employ motion blur, frame blending, 3D, or be matted or stenciled.
- The layer's duration must not be trimmed. (Note that if the source footage is longer than the composition, this counts as trimming!)

Let's work our way through an example to get a better idea of how this works.

Step 1: Open the comp [37.1-XFL Export]. It contains a modified version of the Adobe Encore button project on page 593 of CMG4, with the video thumbnails (GI_WaterElements.flv and GI_CyberTechnology.flv) already compressed as FLV files. Also note that the background – DV_InnerGaze_307019.jpg – is already in the Flash-friendly JPG format.

GOTCHA

Motion(less) Link

On page 595 in CMG4, we mentioned a tip on how to import an Apple Motion project into After Effects. Unfortunately, this no longer works with Motion (at least, as of Motion 3, Mac OS 10.5 and QuickTime 7.5). Indeed, the “rename as .mov” trick will cause After Effects CS3 or CS4 to crash the next time you import a file, while the “Enable All Files” trick returns an error message.



Our goal is to export this animation from After Effects into Flash. Background courtesy Digital Vision; video insets courtesy Getty Images.

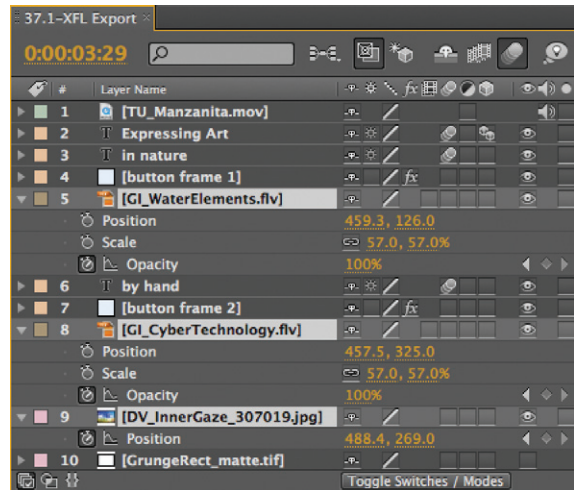
Step 2: RAM Preview the comp to become familiar with its animations. Select **DV_InnerGaze_307019.jpg** and press U; notice that its Position parameter has keyframes. Then select **GI_WaterElements.flv** and press UU to reveal its animating property (Opacity) as well as its other transform properties that have been edited from their defaults (Position and Scale). The layer **GI_CyberTechnology.flv** has the same properties edited. Since these layers are already in Flash-friendly formats, and have no other effects or modes applied to them, these transform properties will be preserved during the XFL export.

Step 3: Select **File > Export > Adobe Flash Professional (XFL)**. Enable the **Rasterize** option, and set the **Format** popup to **FLV**. Then click on the **Format Options** button, which will open the **FLV | F4V Export Settings** dialog originally mentioned on page 592 of CMG4. From the **Preset** menu choose the **FLV – Same As Source (Flash 8 and Higher)** option. It is important that you select one of the Flash 8 options, as these can support alpha channels.

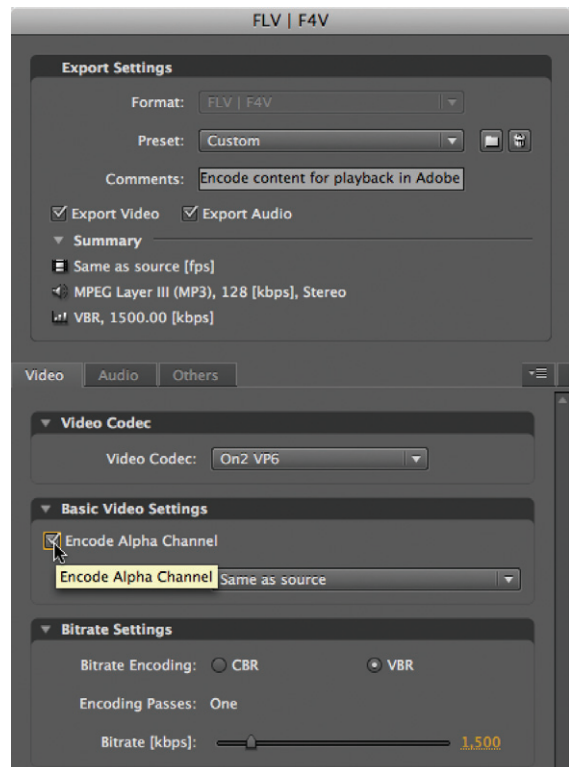
Click on the **Video** tab below, and under **Basic Video Settings** enable **Encode Alpha Channel**. This will preserve the alpha channels for your layers (including the animating text layers with motion blur), making it easier to combine them with other content in Flash. We also tend to scroll down and set **Advanced Settings > Quality** to **Best** (if you don't see the **Quality** menu, scroll down using the scroll bar on the right side of the dialog).

Step 4: Click **OK**, and then **OK** in the XFL dialog. Choose where you want to save this project. Pay attention to the **Exporting** dialog that appears next, as well as the **Video** switch (the eyeball icon) for each of the layers in the **Timeline** panel: These will indicate which layer is currently being processed. You will notice that **After Effects** will render most of the layers, but will skip over the **FLV** and **JPG** layers.

Step 5: **After Effects** will generate an **HTML-format** report file and save it next to your **XFL** project. This contains information on which layers were re-rendered (and why), as well as on which layers were okay in their current state and are therefore merely linked to. Double-click this **HTML** file to open it in your web browser.



Step 2: **FLV** and **JPG** files are supported formats and therefore may be exported intact into **Flash**, even though their transform properties are animating or otherwise altered from their defaults.



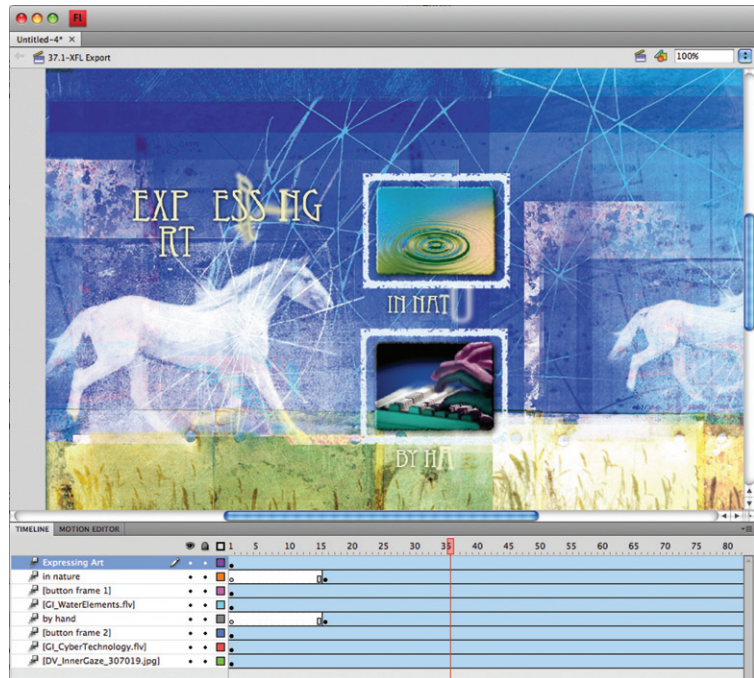
Step 3: Make sure you enable **Encode Alpha Channel** for the **FLV** content you are about to render.

Step 6: If you have a copy of Flash CS4 Professional, open the XFL project file you saved above. The Scene panel should resemble your Comp panel in After Effects, with the main difference being you will see the entire background image – it will not be cropped by the comp's boundaries. (If you want to crop any layer, create a comp-sized solid and use it as an alpha matte or stencil for the layers below. Note that this will cause all of the layers below to be rendered upon export.)

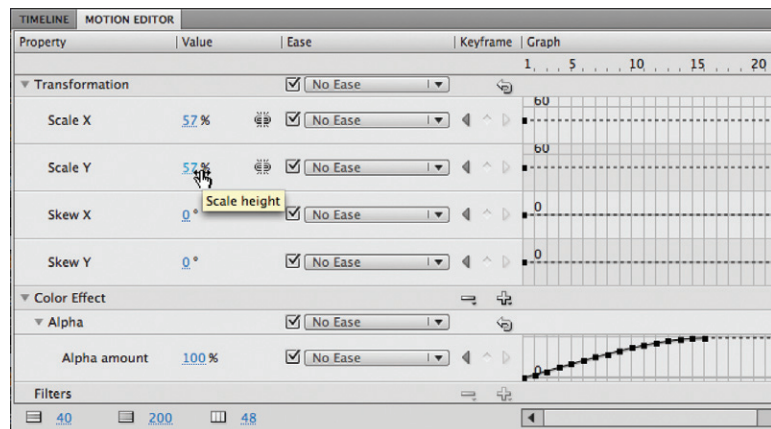
Toggle the layers' Show/Hide switches (under the eyeball in the Timeline) and scrub the time indicator to confirm that these layers and their animations came across intact. Look closely, however, and you will notice that one layer from the After Effects composition is missing: **TU_Manzanita.mov**. Unfortunately, audio is not exported to XFL projects in CS4.

Step 7: Select **GI_WaterElements.flv** (a supported layer) and click on the Motion Editor tab. Scroll through its Basic motion, Transformation, and Color Effect parameters: You will see it retained its Scale and Position values along with its Opacity (Alpha Amount) animation, meaning you can resize and reposition them inside Flash without re-rendering or loss of quality. Unfortunately, a keyframe has been created for every frame of the animation. Adobe does this to ensure accuracy, but it comes at the cost of editability.

Despite its obvious shortcomings (lack of audio support and an overabundance of keyframes), we still feel this new feature goes a long way toward aiding After Effects artists who wish to create content for the web.



Step 6: The resulting Scene panel in Flash will show a re-creation of your After Effects comp.



Step 7: Simple transformations are retained for supported layers. However, keyframes are generated for every frame of an animation.

Mobile Media

Another large step forward in integration is the new workflow between Adobe Device Central CS4 and After Effects CS4. Creating content for mobile devices is an important new business opportunity. The problem is, there are many different devices out there, each with its own specifications and requirements. This process has been greatly simplified by the new ability to use Device Central to automatically build a chain of After Effects compositions. Try it for yourself:

Step 1: Open Adobe Device Central. In the welcome screen that appears, click on Create New Mobile > After Effects File.

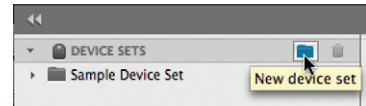
Step 2: In the Device Sets panel in the upper left corner, click on the New Device Set folder icon. Give your new folder a name such as “Cell Phone Project” and press Return.

Step 3: Time to add some devices to your set. Let’s start by adding some universal Flash Lite devices. In the Local Library panel, twirl open Flash Lite and drag the first entry – Flash Lite 1.1 16 176×208 – into your new folder (make sure you drag it *into* the folder, not below). The basic technical characteristics of this device will appear in the main New Composition panel at right.

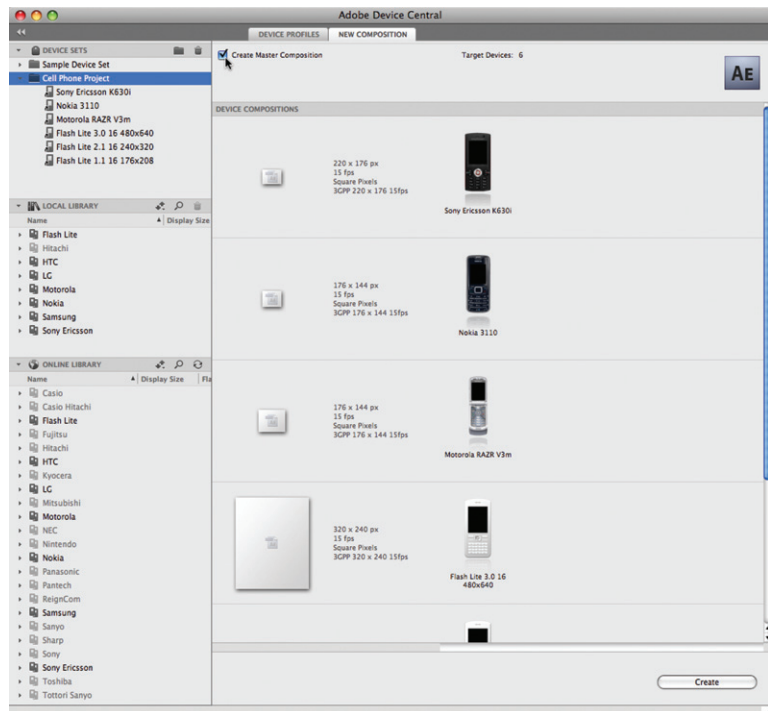
Step 4: Add two more devices from the Flash Lite library – such as Flash Lite 2.1 16 240×320 and Flash Lite 3.0 16 480×640 – to your device set.

Step 5: If your computer has an internet connection, turn your attention to the Online Library panel. It points to specific device profiles that exists on Adobe’s server. Add three more devices to your Device Set (we added the Motorola RAZR V3m, Nokia 3110, and Sony Ericsson K630i). As you drag them into your Device Set, these profiles will be downloaded and added to your Local Library. Ignore the grayed-out devices for now; their profiles are currently unavailable.

Step 6: Select the Cell Phone Project folder to see all of the devices in your set in the New Composition panel at right. In some cases, you will see a graphic of the actual phone.



Step 2: Create a New Device Set folder to hold the descriptions of the mobile devices you will be targeting.



Step 6: All of the devices you add to your Device Set will be visible in the New Composition panel at right.

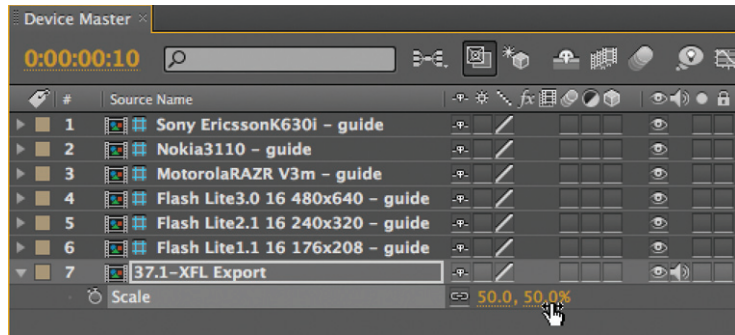
Step 7: Enable the Create Master Composition option at the top of the New Composition panel – this is very important! Then click the Create button in the lower right corner of this panel. You will be returned to After Effects, and a new folder named **Device Central Comps** will be created for you. (If you can't find it, select the QuickSearch dialog at the top of the Project panel and search for “**Device Master**”. Select this comp, then clear the QuickSearch field.)

Step 8: Open the comp [Device Master]. It will contain a black (empty) stage with red bars down the sides. The red bars indicate the area that will be cropped by different cell phones. Solo the guide layers in the [Device Central] comp to see how much each one will crop your universal master image; disable all the solo switches when done.

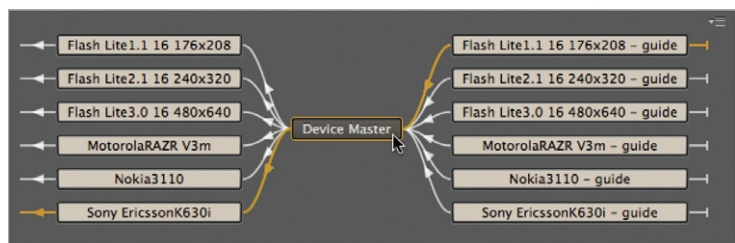
Step 9: Drag a source file or comp – such as [37.1-XFL Export] – into [Device Master] and place it below all of the nested guide comps. Scale it down and position it to fit inside [Device Master] so that it is nicely framed, taking the red cropping bars into account.

Step 10: Tap the Shift key to open the Mini-Flowchart. You will see that a number of “guide” comps – one per device in your set – are nested into [Device Master]. [Device Master] then flows into one output comp per device in your set.

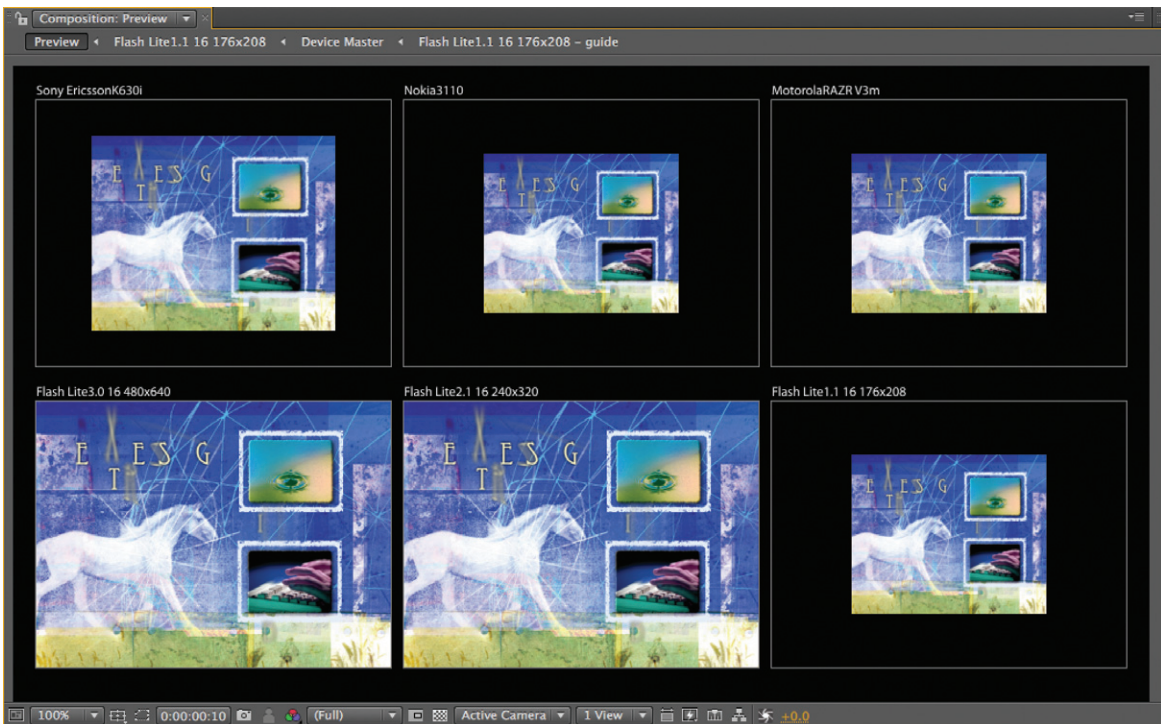
Step 11: Tap Shift to open the Mini-Flowchart again. Click on one of the arrows exiting to the left out of any of the device rendering comps (not the guide comps). This will reveal that all of the device comps also feed a master **Preview** comp. Select [Preview];



Step 9: Scale your source to neatly fit inside [Device Master], taking the red cropping guides into account.



Step 10: [Device Master] is Grand Central Station in your mobile device project: It contains nested guide layers that display each device's cropping area, then feeds comps to render for each individual device.



this displays the output of all of your device comps side by side to give you an idea of how they look relative to each other – a pretty nifty trick!

The result of all this is saved in the folder **37.2-Device Central** inside **CMG4CS4.aep**. The only thing missing is rendering your individual device comps. Check the video format required by each (detailed in Device Central), and adjust their lengths to match your source.

Adobe Premiere Pro

When clips are copied and pasted between Adobe Premiere Pro CS4 and After Effects CS4, Premiere Pro's time remapping is now converted to After Effects' time remapping (the two are based on different time scales). Many blending modes are supported now as well. The same is now true when After Effects imports a Premiere Pro project.

Dynamic Link

Dynamic Link – the ability to directly link select components of project files from one Adobe video application into another without first having to render an intermediate file – has undergone further evolution in Creative Suite 4. Two additions include:

- Adobe Premiere Pro can now act as a Dynamic Link server, running in the background and sending content to After Effects.
- Adobe Soundbooth can dynamically link to After Effects compositions.

Step 11: [Preview] displays all of your device output comps side by side, so you can check their relative size and cropping. This helps you make adjustments to font sizes and layer positions to ensure that your content will look good on all of your requested devices.

FACTOID

Scaled Playback

A mobile device's screen size does not always equal its recommended video size. For example, most devices with a 640x480 screen will take only 320x240 video, which is then scaled up by the device during playback.

38 Integration with 3D Applications

There is no change in After Effects CS4 regarding how it interfaces with dedicated 3D applications. However, it should be noted that Photoshop is becoming a 3D application in its own right: See the sidebar on *Vanishing Point Exchange* on pages 254–255 in CMG4, and the demonstration of the new Photoshop Live 3D layers in the Chapter 14 section earlier in this bonus chapter.

38B 3D Channel Effects

(Bonus Chapter PDF on DVD)

As noted earlier in this bonus chapter, all of the 3D Channel effects have been updated to support 32-bit floating point color values.

Additionally, CS4 contains the *fnord ProEXR EXtractoR* and *IDentifier* plug-ins, which allow access to the additional non-image channels in an OpenEXR file – including Object and Material IDs – in the floating point format. (For more information on ProEXR, download the manual: www.fnordware.com/ProEXR/ProEXR_Manual.pdf.)

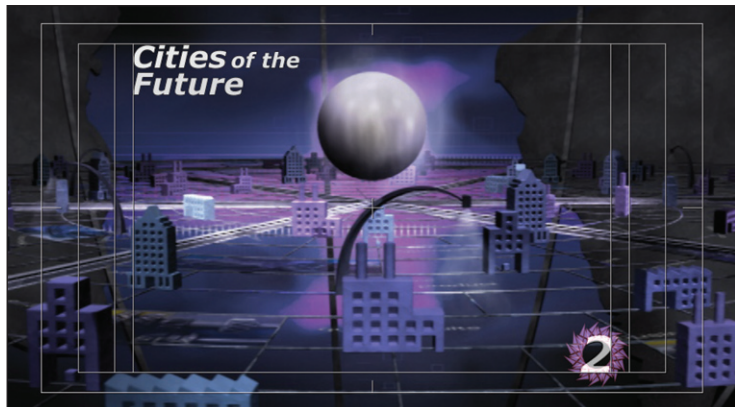
39 Video Issues

There are two changes of note in After Effects CS4:

Center Cut Safe Areas

Quite often, widescreen content with an image aspect ratio of 16:9 (such as high definition video) is converted to an image aspect ratio of 4:3 (the old television standard) by merely chopping off the left and right sides. This process is known as “center cut.”

When you create a widescreen comp in After Effects CS4 and enable the viewing of Safe Areas (toggle by pressing the ' key), the safe areas for a 4:3 center cut image are displayed in addition to the safe areas for the overall 16:9 image. To be safe, make sure your text, station ID bugs, and other important elements reside inside these areas. The placement of these additional guides may be adjusted in Preferences > Grids & Guides.



After Effects CS4 helpfully displays 4:3 center cut safe areas in 16:9 widescreen comps.

New Pixel Aspect Ratios

A dirty little secret that has existed for ages is that most desktop video applications have been using slightly wrong pixel aspect ratios when working with standard definition footage. The difference is almost imperceptible to the human eye, but some engineering departments of

some networks actually care about such things. So as of Creative Suite 4, the following pixel aspect ratios have been corrected across the Adobe product line:

format	old (incorrect)	new (correct)
4:3 NTSC	0.90 (9/10)	~0.91 (10/11)
16:9 NTSC	1.20 (6/5)	~1.21 (40/33)
4:3 PAL	1.07 (16/15)	~1.09 (59/54)
16:9 PAL	1.42 (64/45)	~1.46 (118/81)

The cause behind the math errors in previous versions was the difference between *Production Aperture* (the entire frame) and *Clean Aperture* (the portion of the frame that is supposed to be available for viewing). For example, a 720 pixel wide frame contains extra pixels that were not supposed to be taken into account (4 pixels on the left and right of an NTSC 4:3 frame). The new ratios are based on the slightly smaller, more correct Clean Aperture sizes.

As a result of this new math, After Effects uses slightly different sizes for square pixel compositions, such as 720×534 for NTSC D1. A side effect of this is that some older content – such as 720×540 pixel still images and renders – will no longer exactly fit into its corresponding nonsquare-pixel comp in After Effects CS4. For example, in this particular case you will either need to trim a little extra off the top and bottom, or allow for some blank space on the left and right. You can experiment with this in the D1 NTSC comp [39.2-PAR Changes].

Old projects opened into After Effects are automatically converted to use the new PARs. This is driving some users crazy, and can cause errors when combining material generated in After Effects CS4 with material generated in older versions or other programs. However, for the daring, there is an undocumented and unsupported fix. We suggest this only as a temporary workaround until you become more comfortable with the new, correct PARs:

- Quit After Effects.
- Open the Text Preferences file (described on page 671 of CMG4); the name will now reflect version 9.0 rather than 8.0. For example, the path on Mac is username > Library > Preferences > Adobe > After Effects > 9.0 > Adobe After Effects 9.0 Prefs; the path is similar under Windows.
- Search for the line “Disable Automatic Upgrade of PAR” and change the number that appears afterward from “0” to “1”. Save.
- Restart After Effects.

Now when you open an old project (one that has not been saved yet by After Effects CS4), it will use the pre-CS4 values. Note that any new comps you create, or footage you import, will get the new ratios.

To convert your old project to the new values after this change, a new menu item will appear: File > Upgrade Pixel Aspect Ratios. Select it, and After Effects will comb through your comps and footage items, updating them to use the new values, then report how many items were upgraded.

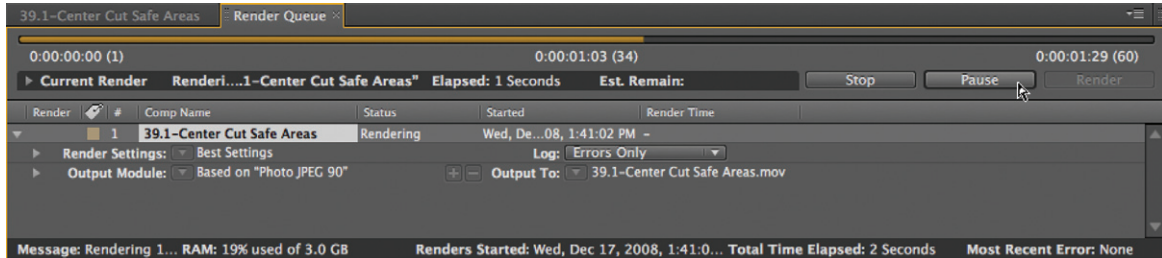
FACTOID

Production versus Clean Aperture

For a more thorough technical explanation of Production versus Clean Aperture, use this link to jump straight to the subject in Chris Pirazzi's classic article Programmer's Guide to Video Systems: www.lurkertech.com/lg/video-systems/#rp187.

40 Rendering Queue

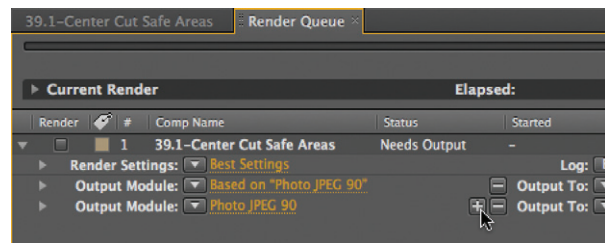
The Render Queue panel has been rearranged in After Effects CS4 with a priority of saving space. This allows you to see more comps in the queue when it is docked into a restricted space such as the Timeline panel's frame.



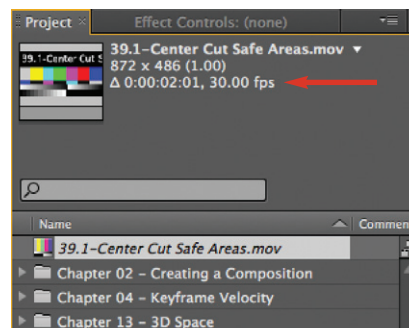
Other tweaks and enhancements include:

- There are now three dedicated action buttons: Stop, Pause/Continue, and Render. Previously there was just a Render button; when you clicked Render, it would turn into Stop while a second Pause/Continue appeared above it. This caused some confusion, leading some users to accidentally Stop a render when they intended to Pause then Continue it.
- If your disk runs out of space in the middle of a render, After Effects will now pause rather than stop the render. This gives you a chance to free up some disk space and then continue a render, writing to the same file as when you started.
- There are now buttons in the Render Queue to directly add or delete Output Modules (previously, adding an Output Module required a trip to the menu item Composition > Add Output Module).
- You can drag an Output Module to the Project panel (make sure you drag just the Output Module, not the entire item in the Render Queue!). If you have already rendered this comp, the resulting movie or image will be added to the project. If you have not rendered this item yet, a placeholder will be created; the placeholder will be automatically replaced with the actual file after rendering. Either the placeholder or the file can be used as a layer in another composition, allowing you to set up chains where one comp uses the output of another comp that has not yet been rendered.

The new Render Queue panel is considerably more compact and space-efficient.



To add an Output Module to an already queued render, click on the + button next to the existing Output Module.



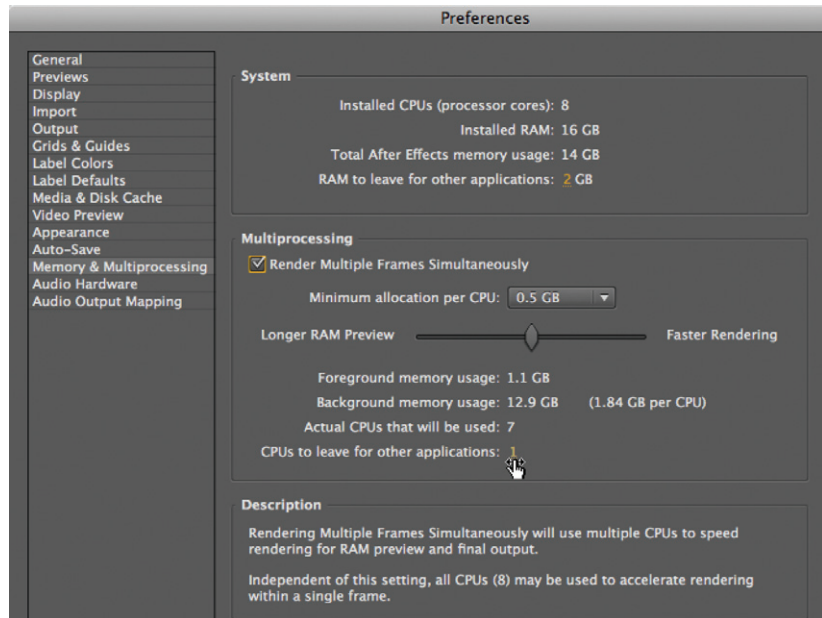
An Output Module can be dragged to the Project panel to create either a Placeholder (shown here) or a copy of the rendered output. Note that the placeholder may have the wrong frame rate and duration (this item actually has a rate of 29.97 fps and a duration of 02:00) until the source comp is rendered.

41 Advanced Rendering

The settings for multiprocessor rendering are more intuitive in After Effects CS4. Also, this chapter is a good place to show off some of the capabilities of XMP Metadata (first mentioned back in the section on Chapter 36).

Multiprocessing

Preferences > Memory & Multiprocessing consolidates what used to be components of two preference panes in CS3 (Memory & Cache and Multiprocessing). This unified preference pane pulls off the rare trick of being more powerful while also being easier to understand. It is a good idea to allocate between 1 and 2 GB per CPU, and to leave a CPU free for other applications (assuming you're the type who likes to web surf while rendering in the background).



XMP Metadata for Markers

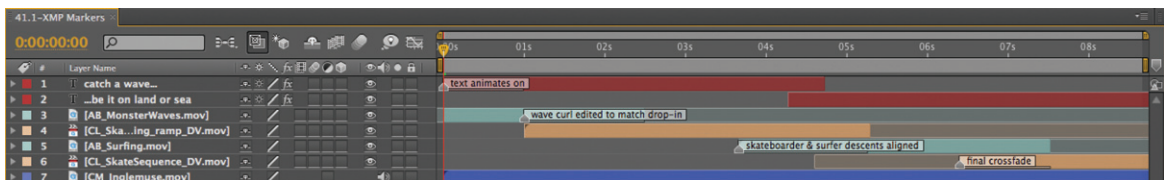
Although support for XMP Metadata will be most appealing to those who work on larger projects or in larger facilities, there are still cases where it can be useful to the normal motion graphics artist. For example, After Effects CS4 can remember all of the markers in a composition and store those with a rendered movie of that comp. Import the rendered movie, and you get all of the original markers as well. (Note that the following exercise requires 9.0.1 to work smoothly; there were some issues in 9.0.0.)

Step 1: Open Preferences > Media & Disk Cache, and enable Create Layer Markers from Footage XMP Metadata.

Step 2: Open the comp [41.1-XMP Markers]. Several of the layers have markers (with durations – see the section on Chapter 6).

The new consolidated Memory & Multiprocessing preference is much easier to set up and understand.

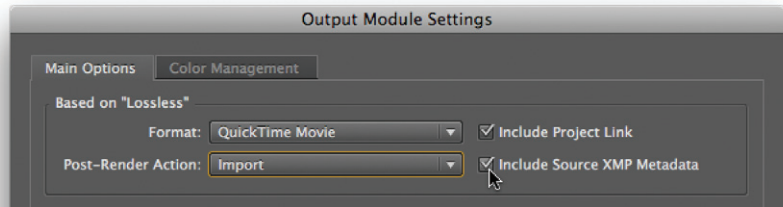
Step 2: The source comp has markers with duration on several of the layers.



Step 3: Type Command+M (Control+M) to add this comp to the Render Queue; choose a place to save the rendered file.

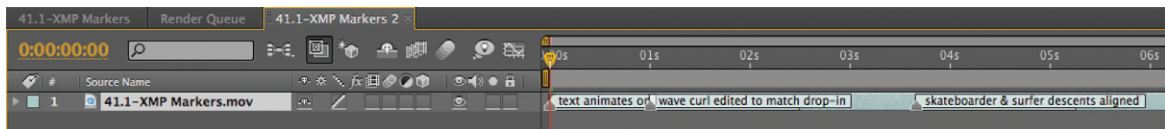
Step 4: Open the Output Module settings for this comp. At the top of this dialog, make sure that Include Source XMP Metadata is enabled and that the Post-Render Action popup is set to Import. Close the Output Module settings and render the movie.

Step 5: After rendering, the resulting movie will appear in the Project panel. Drag it to the Create a New Composition button at the bottom of the Project panel. The layer generated from your rendered movie will have all of the layer markers you saw in [41.1-XMP Markers].



Step 4: Enable Include Source XMP Metadata to save your metadata with your rendered movie. (Also remember to enable the marker preference back in Step 1!)

Step 5: The rendered movie retains all of the markers that appeared in the original comp.

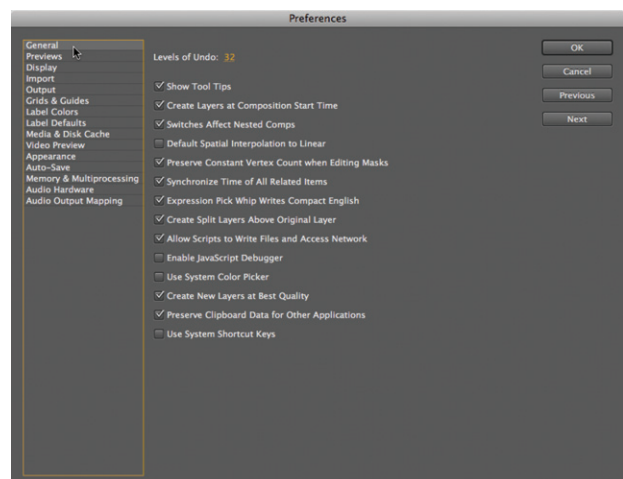


42 Prerendering and Proxies

No changes in CS4, aside from the ability to drag an unrendered Output Module to the Project panel to create a Placeholder (see section on Chapter 40).

43 What's Your Preference?

The most obvious change is that the Preferences dialog was redesigned in CS4 (right). The popup menu previously used to access different preference panes has been replaced with a list of buttons down the left side. Additionally, the order of the panes has been slightly rearranged, and the contents of a few of the panes have been updated. On the next page, we will briefly discuss the changes to each pane affected; most of these subjects have already been discussed earlier in this bonus chapter in the context of their actual features.



Previews

As mentioned in the section on Chapter 2, OpenGL now as an Adaptive Resolution option.

Display

The Auto-zoom When Resolution Changes preference has been replaced by an Auto option for the Resolution popup along the bottom of the Comp panel (see Chapter 2).

Grids & Guides

Hand in hand with the addition of the “center cut” safe area display (see Chapter 39), you can set where these additional safe margin grids are drawn.

Label Defaults

As mentioned in Chapter 21, Adjustment Layers now have their own label color.

Memory & Cache

The Memory portion of this pane has been moved to the expanded Memory & Multiprocessing pane (see Chapter 41). The old pane has been renamed Media & Disk Cache, and has taken on the new XMP Metadata options (see the relevant comments in the section on Chapters 36 and 41).

While we’re here, an option that existed in CS3 could stand some clarification: The Clean Database & Cache button does not actually *erase* any data; it just removes unused *links* to that data. You will need to manually delete no-longer-needed items from the Cache folder in order to recover the disk space consumed by these.

User Interface Colors

This preference pane has been renamed Appearance. The Brightness range is also now larger.

Multiprocessing

This pane has been expanded to cover Memory & Multiprocessing, and has much clearer options (see Chapter 41).

Very special thanks to Todd Kopriva (After Effects documentation lead), who was a tremendous aid in fleshing out the features mentioned in this bonus chapter. Todd’s excellent After Effects blog can be found at blogs.adobe.com/toddkopriva/. Thanks also to Peter Constable who steered us through understanding the new scene-referred color profile behavior.