

## After Effects Introductory Workshop

### - The Purpose of After Effects:

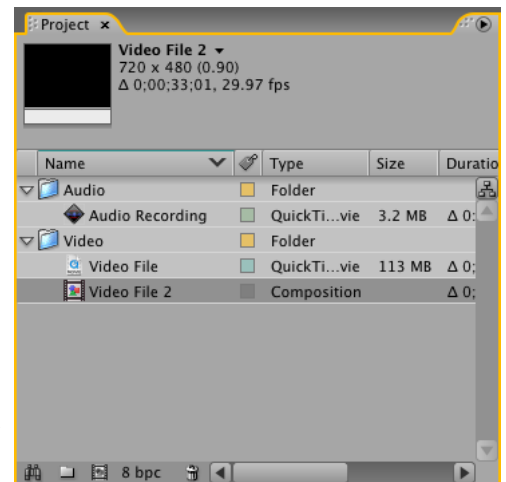
After Effects (AE) is a digital motion graphics, animation, and compositing software. It is not intended for editing video like Final Cut. Rather, it was designed for creating video effects, moving titles, and animation.

### - Introduction to the After Effects Interface

(A quick overview of the main components necessary for operation).

- The **project window** is analogous to the bin in Final Cut. It is where you store and organize all media assets. It is where you import and interpret your video footage, still images, image sequences, and whatever else you might be working with.
- The **Footage/Layer/Composition** window in the center of the screen is where video display happens. Previews of imported footage, contents of individual layers in a timeline, and compositions will all be displayed here.
- The **Timeline** window is where you construct, layer, animate, and keyframe your assets into a composition.
- The **Info Palette** shows you information about useful things like cursor position, RGBA values, and playback framerate.
- The **Effects and Presets** window shows a searchable categorized list of all effects you can apply to layers in the timeline.
- The **Effects Controls** Palette shows all effects applied to the currently selected layer, with their parameters listed.

- **Importing footage** in After Effects is a similar process to importing footage in Final Cut Pro. As in Final Cut, the process of importing footage is only creating a reference in the project window to the original file. Think of the asset you import as a pointer or alias referenced to the original media file. To import footage, you can use the right-click context menus in the Project Window area, the toolbar menus, or keyboard shortcuts. This variety of ways to perform one action is representative of most functions in After Effects. As you grow more familiar with the program, keyboard shortcuts will become a second nature to you, but as you begin, they might be difficult to remember.

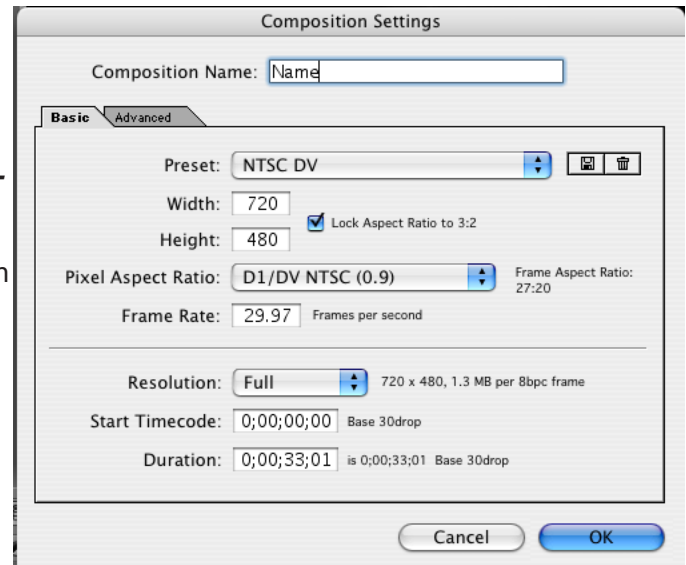


- You can import a great variety of **file formats** to work with in After Effects. Still images, video and audio of most formats, and specialized formats such as Photoshop files, Illustrator files, Flash video, and Image Sequences are all viable options. You can preview imported footage by double-clicking on the asset.
- As should be familiar from working in Final Cut Pro, **project organization** is one of the keys to success. The main method of organization in the After Effects project window are folders, which are the same as Bins. Click on the new folder button at the bottom of the project window, or right click in the project window to create a new folder.

### - Creating a new composition:

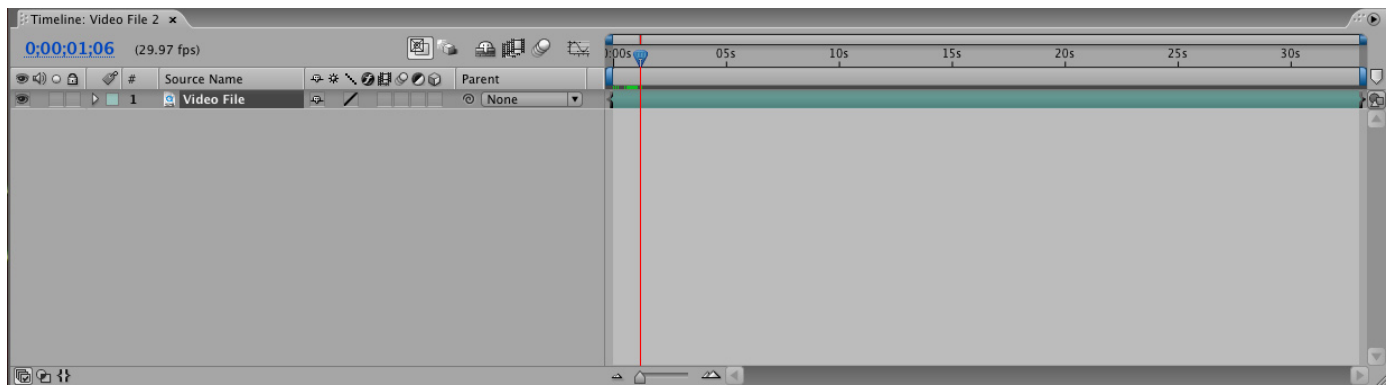
- A **composition** is the basic building block inside After Effects, similar in concept to a sequence in Final Cut Pro; you can add video footage and other assets into a composition, and you can nest compositions within each other (add a composition as a footage item into a different composition).
- Again, there are several different ways to **create a composition**: button at bottom of project window, context menus, or **Ctrl/Cmd-N**.
- When you first create a new composition, you will be presented with the new **composition settings** dialog box. You must then consider the resolution, framerate, pixel Aspect Ratio, and duration you want to use, and set them all.
  - Using one of the presets, such as NTSC DV, will be quite sufficient for common use with video.

- Unlike NLE's, composition durations in After Effects are not dynamic; their length is not automatically extended when you add more footage. You have to set and change the duration of the composition in the composition settings dialog. Press **Ctrl/CMD-K** to quickly access the Composition Settings window.
- Once a composition has been created, it will open in the **Timeline** window, enabling new options and buttons, and allowing you to add other assets to the composition.



### - Adding footage to a composition:

- The simplest way to **add footage** to a composition is just to drag in the asset from the project window into the timeline. This will create a new **layer** in the timeline window.
- The behavior of how the layer is added will be altered depending on how you add it. If you drag the source clip from the project window to the left side of the timeline window, it will add the media with the first frame at the beginning of the composition. If you drag the source clip into the timeline area of the timeline window, you can set the in-point of the layer. If you drag the source clip into the composition window, you can actually add a layer while simultaneously setting the x-y position of the layer in your composition.
- You can also create a new composition with the same attributes as the source media file (duration, resolution, framerate), if you drag it to the "new composition" button at the bottom of the project window. If you only want to add a segment of a video clip into your composition, you can **Alt-Double-Click** on a footage item to open it first in the layer preview window, where you can set in-out points, and then perform an insert/overwrite edit into the timeline's displayed composition, using the buttons at the bottom of the window.
- Sometimes it is important to make sure your footage is interpreted correctly. If you are importing special footage items, like an image sequence, 24p video, or still images from Photoshop, you may need to change the settings of how it is imported. This can be accomplished through the **Interpret Footage** dialog box. To access this, select the footage item you wish to interpret, and either right-click, interpret footage, main, or press **Ctrl/Cmd-F**. If the Photoshop file has an alpha channel, you can set that here. If you are importing an image sequence, you can set the framerate of it here. You can also manipulate the deinterlace/pulldown removal settings.
- You can also add what are called "Solids" to the timeline. Solids are basically a layer that has a solid color that is the size of the resolution of your composition. You can then use these layers to apply effects, transformations, and even masks to, in order to create animation and effects. You can create a new solid by either using the shortcut: **Ctrl/Cmd-Y**, or by right clicking in the Timeline window and going to New, Solid. You can then choose a color, name, and set the resolution.



## - Overview of Timeline window:

- There are both similarities and differences with programs like Final Cut Pro in After Effects' timeline window. You have a "play head" as an indicator of your current position within the timeline, and a linear representation of time progressing from left to right.
- Unfortunately, that is where the similarities end. After adding a couple layers to a composition, you can see that After Effects has "Layer-Based Composition", whereas Final Cut Pro has "Track based composition". This means essentially that in After Effects, each clip that you add to a composition will become a layer stacked on top of previous layers in space. Whereas in Final Cut, you can add as many clips as you want to a single track, one after the other in time.
- Another (huge) difference is that After Effects is not a real-time system. This means that there is usually no real-time playback in After Effects without first rendering a segment of a composition as a "ram preview" (basically rendering frames into a cache in RAM and then playing them back).
- Therefore, Final Cut much more suited to editing, and After Effects is much more suited to compositing, effects, and animation.
- If the duration of the video clip is longer than that of the composition, the video clip's layer will just extend past the end of the composition. In order to make the length of the composition extend out to show all of the layer, you have to change the composition duration. There is a very handy keyboard shortcut to display the composition settings window, when a composition is selected: Ctrl/Cmd-K

## - Navigating the Timeline

- At the top of the timeline, you can see a ruler-like measuring device. If you are zoomed out far, you will see second markers increasing incrementally from left to right. If you zoomed in more, you would see frame increments as well. After Effects **measures time** in terms of seconds and frames. The number of frames between seconds will vary with what framerate you are working in.
- There are a number of ways to change the **zoom level** of your timeline. At the very top of the timeline window, there is a control bar. If you grab the ends of this bar, you can zoom your timeline view in or out. If you grab the main portion of the bar, you can scroll from left to right in your composition. There is also zoom control in the lower-left hand corner of the layer view of the timeline, which can be used to zoom. The mouse wheel is also your efficiency-pal. If you **Alt-Scroll** with your middle mouse button, you will zoom in or out on the point where your cursor is. If you **Shift-Scroll** with your mouse wheel, you will pan left or right in the timeline.
- You can also hold click and hold the spacebar in the layer area of the timeline, which turns the arrow tool temporarily into the **hand tool**, allowing you to drag laterally across your timeline area. This is also true of the Composition/Layer window.
- The bar below the top bar, just above the time-ruler, is called the **work area** bar. This defines the current work area of your timeline, and is what section After Effects can load into RAM for previewing footage in real-time. It is good practice especially when working on a large or complex project to keep the work area bar limited to just the area where you are working.
- There are many ways to **navigate through time** in the timeline window. Of course the most obvious way would be to grab the play-head with your mouse and drag it. But you can advance frame-by-frame with the **PgUp** or **PgDwn** keys. If you hold shift while doing this, it will advance 10 frames. This kind of control is very useful when doing frame-accurate keyframing.

## - **Controlling layers within the Timeline Window**

- Each layer in the timeline can be moved in two different ways: horizontally and vertically. Shifting a layer horizontally moves the position of the layer in time. Shifting a layer vertically will move its position in the stacking order of the composition.
- To shift a layer horizontally, all you have to do is grab the layer and shift its position by dragging. If trimming the layer is necessary, you can do this within the timeline by grabbing the little polygonal button at either end of the layer and drag. The colored portion of the layer represents the video between the in/out points – the active video. A useful tip for manipulating layers in the timeline is to hold down your shift key while moving a layer or shifting its in/out points to enable snapping.
- To understand the vertical stacking of layers, imagine sedimented matter at the bottom of an ocean floor. Layers upon layers of matter sink and form layers of sediment. New layers of discarded carapaces and digested fish bones obscure the layers already there. After Effects operates in a similar fashion. Layers lower in the stack are covered up by the layers above them (except where those layers are transparent!).
- To shift a layer vertically, we must focus our attention on the leftern portion of the timeline window, with all of the intimidating switches and boxes contained therein. Under the name column, you can grab the layer and drag its position vertically, shifting its position in the stack.

## - **Composition/Layer Preview Window**

- As you move the play-head around in the timeline, you will notice the video footage being monitored in the composition window. This is exactly like the video preview window in Final Cut. It displays the processed result of the stack of layers in the timeline window. It is pretty self explanatory, except for the switches. (discussed below from left to right).
- Zoom drop down dialog: changes the zoom of the comp view. You can also zoom with a scroll of your middle mouse button.
- Title/Action-Safe indicators.
- Current time (click to edit).
- Click to take a snapshot of the current frame (you can also hit **Shift-F5** through **F8**, and then press **F5** through **F8** to display the image you captured again).
- Display previous snapshot.
- Color Channels to display. Has choices for RGB, Red, Green, Blue, and Alpha. You can also **Alt-1** through **Alt-4** to display these color channels quickly.
- Changes the working display resolution. If your system is bogging down, you can choose "half" and only half of the pixels will be rendered for each frame for preview purposes.
- Display Area of Interest. (renders only a definable section of your frame – saves memory).
- toggle transparency grid: if enabled, all areas that are transparent in the video image will show through to checkerboard pattern. This is probably recognizable from Photoshop, and is useful to see what areas of your image are transparent (as is displaying the alpha channel, which defines transparency).
- The aspect ratio correction is useful to make DV looks as it is supposed to, not stretched horizontally.
- Switches to timeline or preview window.
- Woo, Flowchart!
- Holding the spacebar while in the Comp window will enable the hand tool, which lets you navigate around in your image. This is especially useful if you are doing detailed work at high zoom.

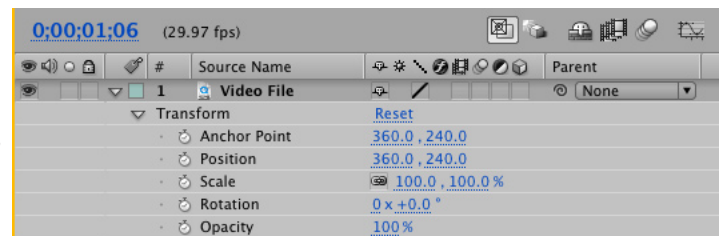
### **Layer Window**

- If you double click on a layer in the timeline, a new tab will open in the Composition Window. This is the layer window, and it is different from the Comp window. The layer window will display the unaltered original layer footage, unaffected by any effects, masking, and transformations applied to it in the composition.
- If you notice that your changes to a layer in the timeline window are having no effect, you should check to make sure you are not looking at the layer window instead of the composition window.

## - Previewing Footage

- Similar to Final Cut, if you tap the spacebar with the timeline centered, your composition will begin to play. If you take notice of the info palette, you may notice that the *fps* notifier will show something less than realtime. This means that the footage that you just played was playing back slower than it actually would when rendered.
- You may find it disconcerting working in After Effects and being unable to preview footage with realtime playback. It is hard to get a sense of what footage will look like without this ability. Thankfully there are ways to **preview footage** in realtime with After Effects.
- You may notice a green bar above your footage that has been previewed. All frames with green above them have been rendered temporarily into RAM, and will play back at realtime if you play it again.
- An alternative way to achieve realtime playback is the **RAM preview** function. This functionality is in your Time Controls palette (Ctrl/Command-3), which contains various playback buttons. If you push the triangular lined button on the far right, OR if you press the 0 key on the numeric keypad, A RAM preview will be started.

Note: The RAM preview process will render every frame within your work area (or until AE runs out of ram), and then when you press the spacebar, will play the footage back at realtime speed. You can set the beginning and ending of your work area easily with the keyboard shortcuts **B** and **N**, respectively.



## - Explanation of Useful Switches and Dials

- Following is a brief explanation of the switches in the left side of the Timeline window, from left to right.
- Hide/Reveal layer button
- mute/enable audio button: enables or disables audio, if the layer has an audio track
- solo button: "solos" a layer, by showing it alone in the Comp preview window
- lock layer button: locks the layer so that you cannot edit it: useful for disabling changes to a layer if you have completed editing it.
- layer names!: If you hit the return key with the layer selected, you can enter a descriptive title for the layer. This is very useful for organizational purposes.
- If you press **F4**, you can reveal and hide the **switches column** in the Timeline. This allows you to enable and disable a variety of important options for each layer. From left to right, these options are:
  - Shy Switch: all layers with this switch enabled are hidden from view when you click the shy switch in the upper right section of the left portion of the Timeline window.
  - Quality: shows the layer in Best, Draft, or Wireframe mode.
  - Effects: enables or disables effects applied to the layer.
  - FrameBlending: enables or disables frame-blending for the layer. (note that frame blending must be enabled in the composition for this to be viewed. Click the larger frame blending above the switches column.)
  - Motion Blur: enables and disables motion blur for a layer. This will blur layers whose position is being moved. This also must be enabled composition-wide to be viewed.
  - Adjustment Layer: turns the layer into an adjustment layer – all effects applied to this layer will also effect layers underneath it. Note that you can also add adjustment layers by right-clicking in the Timeline and going to New, Adjustment layer.
  - The last switch sets the layer to be 3-dimensional. You can rotate and position it in 3 dimensions! Note that of course a still image or a video clip will only be 2-dimensional, but it is a useful ability in animation to be able to position a layer in 3 dimensions.

## • Parenting

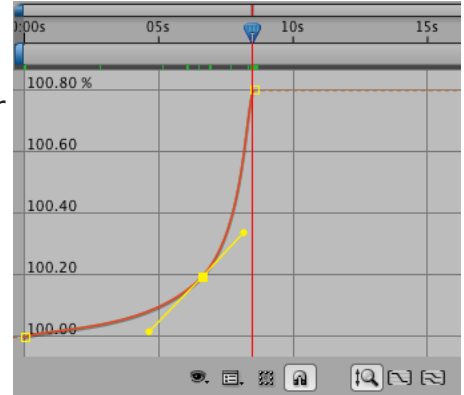
If you press **Shift-F4**, this will display the Parenting column. Parenting is an essential concept to master if you are doing traditional animation in After Effects. Basically it enables you to link different layers together, so that if you transform one layer that other things (limbs, for example) are connected to, the attached things will transform with it. For example, if you have 3 layers that you imported from Photoshop that you want to animate, a torso, and two arms, you could set each of the arm layers to have the torso layer as a parent. To do this, select the parent drop-down menu

for each of the arm layers, and choose the torso layer for each. Now if you transform the torso layer, the arm layers will “follow” it. The concept of an Anchor point is very important for doing this. Read about it in the next section.

## – Transforming Layers, Intro to Keyframes

- The transform properties and all of the other keyframeable values of each layer are located under the “reveal triangle” at the left of the layer’s name. If you twirl down this triangle, and then twirl down the “Transform” section, you will see 5 different parameters you can transform the layer by: Anchor Point, Position, Scale, Rotation, and Opacity.
  - The **anchor point** sets what point on the layer it is transformed around. For example, if you rotate the layer, it will rotate around the anchor point. Setting the anchor point to your best advantage is essential for the type of animation discussed in the Parenting section above. For example, if you want the “arm” layers to transform around their shoulder joint, you would want to set the anchor point to be exactly at the shoulder. This way when you rotate the arm layer to animate a goodbye wave, for example, the arm will pivot by the shoulder joint, instead of some other not-so-good place. Usually the best way to set the anchor point is actually probably not numerically with the anchor point parameter, but rather by double-clicking on the layer in question to open up the layer properties window. You can then position the circular crosshair looking object. This is the visual representation of the anchor point. Put it at the correct place (the shoulder in the previous example).
  - The **Position** property merely sets the x,y (and z, if 3D) position of the layer in the composition. Note that it has two parameters, one for horizontal position, one for vertical position. An easier way to transform the position of the layer than changing the values numerically, is to grab the layer in the composition window with your mouse, and drag it where you want it. The position values in the Timeline will update automatically.
  - **Scale** sets how much the layer is expanded or contracted from its original resolution. Note that there are individual settings for horizontal and vertical scaling. By default these are locked together, but if you uncheck the little chain icon to the left of the parameters, you can alter them independently.
  - **Rotation** sets how much the layer is rotated. The number on the left is how many full rotations, the number on the right (degrees) sets how many degrees to rotate. 360 degrees equals one full rotation.
  - **Opacity** sets how transparent a layer is. If the opacity is set to 0, you won’t be able to see it. If it is set to 50, it will be halfway transparent. 100 will be entirely opaque.
  - Of course all of these different transformations can be **Keyframed** to change the values of their parameters over time.
- **Keyframes** are an essential concept to master in After Effects. The entire purpose of the program is to change values *over time*. These values could be any parameter – position, scale, rotation (the transform properties), or the parameters of various effects.
- When you **set a keyframe** at one point in time, and then set another at another point in time on the same parameter, the value of that parameter is interpolated between the values of the two keyframes. To set a keyframe, all you have to do is click the little stopwatch icon to the left of the property. When you do this, notice that a diamond shaped object has appeared in our timeline at the current location of the play-head. This is a keyframe. If you move the play-head to a new position, and change the value of the keyframe-enabled parameter, another keyframe will be created. Now the value of the keyframed parameter will change over time between the two time-points you just defined.
- You can also **create a keyframe** with the same value as a previous keyframe by clicking the diamond-shaped button at the far left of the timeline for the keyframe enabled parameter. This creates a new keyframe at the current position of the play-head regardless of change in the value of the parameter. You can navigate from one keyframe to the next and back by using the arrows on either side of the diamond-shaped “create new keyframe” button. You can also use the shortcut keys **J** and **K**.
- If you are changing the position transform parameter of a layer, you can also edit keyframes by manipulating the **Motion Path**. If you set two keyframes for the position property of a layer, you will see its motion path displayed in the composition window. Using the Pen tool, you can alter the motion path in order to change the positional animation of the layer through time.
- The **Graph Editor** is a new way of editing keyframes in After Effects 7.0. Basically, it shows you

an cartesian coordinate system with a graph of the keyframe values, and lets you manipulate these values as you would a mask. To display the graph editor, press **Shift-F3**, or click the Graph Editor button at the very right of the buttons at the middle-top of the Timeline window. Now if you select the keyframed property in the left of the timeline, you should see a graph of the values over time. (horizontal = time, vertical = keyframe value). If you are working with multiple keyframed parameters, and want to display both, you can select the little graph icon to the right of the keyframe-enable stopwatch icon to the left of the parameter name, and the graph will be always displayed in the graph editor regardless of whether the parameter is selected.



- **Navigating the Graph Editor** can be confusing at first, but with a few tricks, it will become second nature. By default you can only zoom horizontally, because the auto-zoom height button is selected. You can unclick this if you desire more control. It is the 5<sup>th</sup> icon from the right at the bottom of the Graph Editor. Now you will be able to zoom both horizontally and vertically. To zoom horizontally, you can use the familiar **Alt-Scroll** of the middle mouse button, or you can zoom in with the timeline interface. To zoom vertically, you can hold down **Ctrl/Cmd** and scroll. Also very useful is holding down the spacebar to temporarily transform it into a hand tool, so you can scrub about your area of view.

## - Masks

- Creating a mask on a layer creates a definition of what areas will be transparent. For example if you mask off a circular area, you can set the area that that circle contains to either be completely transparent (with surrounding area opaque), or completely opaque (with all surrounding area transparent). Like everything else in After Effects, the parameters of a mask can be animated over time.
- The process of **manipulating masks** is somewhat complex, and takes some getting used to. If you have used Photoshop before, it is very similar to that. There are a number of ways to create a mask. One is to use the Pen tool. To do this, you can either select the pen tool, or hold down Ctrl/Cmd with the arrow tool selected, which temporarily transforms the arrow tool into a pen tool. If you click now, it will create a new mask point. If you then create another mask point, it will link these two together with a line. If you create enough mask points to contain an area, and select the original point you created, it will close the area and create a closed mask. If you **Ctrl-Alt-Click** on any mask point, it will change it into a bezier-curve point and back. You can also create a bezier-curve point by clicking to create a new mask point, and instead of releasing the mouse button, dragging slightly. This will enable you to set the curve how you wish. If you **Ctrl-Click** on a created point with the arrow tool, it will delete it.

## - Effects!

- As the name of the program suggests, much of the power and usefulness of After Effects comes from its ability to apply a wide range of effects to footage.
- If you twirl down a layer in the timeline window, by clicking the little triangle to the left of the layer name, a host of options for transformation will be revealed. Under the Transform twirly, there are options for altering the layer: rotating, shifting the position, opacity, scale, etc. The numerical values for each of these *parameters* is adjustable.
- Like many other functions in After Effects, there are multiple ways to add effects to a layer.
  - With the layer selected, you can go the effect menu, and choose the effect you wish to apply. Alternatively, you can right-click on a layer, and go to effects / <effect>. Or, and this is probably the most efficient way to apply an effect, you can open the **Effects and Presets Palette**, and type the first few letters of the effect you are looking for into the "contains" text box. This search function will automatically limit the listed effects to those that match your inquiry. This method is faster than digging through context menus!
  - When you apply an effect, you will notice a new window pop up: the **Effects Controls Palette**. This window lists all of the effects that are applied to the currently selected layer. Each effect listed has a twirly to show or hide the parameters for that effect. Each effect also has an

enable/disable switch right next to the twirly (looks like a cursive f). The effects controls palette can be hidden or shown with the F3 key. (very useful shortcut!)

- Under the heading of each effect are listed its **parameters**. Adjusting these numerical values will allow you to adjust what the effect does. The little stopwatch icon enables keyframes for its respective parameter.
  - Once keyframes are enabled for an effect, the position and data values of any number of keyframes can be edited in the timeline window.
  - If you twirl open the effects category, all effects applied to that layer are listed. The keyframes of each parameter can then be edited. (this process is very similar to Final Cut Pro).
- **The Render Queue**
- When you have completed a composition to satisfaction, next step is to get it out of After Effects into a rendered video file. This is normally accomplished with the Render Queue. To add a composition to the Render Queue, either click Composition / Add to Render Queue, or type **Ctrl-Shift-/ (Cmd-Shift-/)**, or **Ctrl-M** for "make movie".
  - In the Render Queue, you are presented with 3 different areas of settings to manipulate the output file – Render Settings, Output Module, and Output To.
  - **Render Settings** sets elements of the frame format, like interlace mode and framerate, as well as other settings like quality, resolution, time-span, etc.
  - **Output Module** allows you to specify what format you want the video to be – Mov, Avi, Image Sequence, etc. You also can set the compression with the "Format Options" button. You can also choose to output audio here if your composition has it. There is one important thing for animation in this settings page. If you want to preserve any transparency that your composition might have, you need to set the "channels" drop down to "RGB + Alpha". This will render out video with both RGB color and an Alpha channel of transparency.
  - **Output To** is very self explanatory – it just allows you to choose the location and filename to save the rendered video file to.
  - If you find yourself intimidated when presented by this host of settings, don't be. You can just use the **Presets**, which likely contain most settings you will need. For example, DV settings under Render Settings, and Quicktime DV under Output Module will be fine for DV video.
  - When all of the settings are satisfactory, Click the Render button, and wait for the magic to complete!

## Chroma Keying

- A very powerful and amazing Chroma Keying plugin should soon be bundled with the After Effects installations on the computers in the MML: Keylight. Learn it. Use it. Love it.

## Offt Used Keyboard Shortcuts ( Windows/Mac conversion: Ctrl = Cmd, Alt = Option, Shift = Shift )

Note: most keyboard shortcuts can be found in the manual

Ctrl-O	open a project
Ctrl-I	import footage
Ctrl-N	create a new composition
Ctrl-K	display composition settings
F3	(with layer selected) display effects controls palette
0	ram previews the current work area
B or N	sets beginning and end of work area
.	preview audio only
Ctrl-Shift-/	add composition to render queue
Ctrl-Shift-M	add comp to render queue while setting filename
Ctrl-F	(with an asset selected in the project window) display interpret footage dialog
J or K	jumps to previous or next keyframe displayed.
Shift-F3	Display the Graph Editor
Alt-[ or ]	sets the in/out points of a layer.



## – How to get help and teach yourself

- The most effective way to learn After Effects is to experiment with it and learn on your own. In accordance with this goal, here are some useful resources.
- **After Effects Help File**  
Everything you need to know to operate the program is contained in this well-written, intuitively organized, and easily searchable help file. Just press F1 while running After Effects, or click Help / After Effects Help.
- **Online Tutorials** (see the mirror of this tutorial on my [blog](#) for easy access to these links: <http://www2.evergreen.edu/blogs/students/smijed07/> )
  - <http://www.creativecow.net/articles/aftereffects.html>  
CreativeCow.net has a great deal of superb and useful tutorials. This link is to a list of all of their written After Effects Tutorials.
  - <http://www.creativecow.net/aepodcast/>  
CreativeCow's new series of excellent video podcast After Effects tutorials.
  - <http://www.stephenschleicher.com/>
  - <http://aftereffects.digitalmedianet.com/articles/splasharticle.jsp?type=techniques>
  - <http://www.editorsguild.com/AfterEffects.html>  
an introductory tour of after effects, fortified with example projects
  - <http://www.toolfarm.com/jezra/display.php?show=1&Go=Go>
  - [http://www.xtreme-is-back.com/tutorials\\_speffects.html](http://www.xtreme-is-back.com/tutorials_speffects.html)
  - [http://www.pixel2life.com/tutorials/Adobe\\_After\\_Effects/All/](http://www.pixel2life.com/tutorials/Adobe_After_Effects/All/)
  - [http://www.ayatoweb.com/ae\\_tips\\_e/ae51\\_e.html](http://www.ayatoweb.com/ae_tips_e/ae51_e.html)
  - <http://www.videocopilot.net/tutorials.html>  
a very energetic after effects instructional video creator...
  - <http://msp.sfsu.edu/Instructors/rej/aepage/aeportal.html>  
a portal to all things AE...
  - <http://media-motion.tv/>  
an excellent and well-trafficked After Effects list-serve. Sign up and read what people are saying, and post questions if you have them!
- **Total Training/Lynda.com Training Videos**
  - These are ridiculously thorough video training in all things After Effects, conducted by articulate professionals. To "borrow" a "copy", talk to Jed, Brad, or Alex.
- **Books**
  - There are many books out there about After Effects, but one of the best is *Creating Motion Graphics with After Effects – Volume 1: The Essentials* by Trish and Chris Meyer. Instead of just telling you how to perform functions in After Effects, it attempts to teach you techniques for being creative inside the program, teaching you in the context of real-world design problems.

Explanations of important concepts about video for people who don't know and are interested:

## – Interlacing ( read more: <http://en.wikipedia.org/wiki/Interlacing> )

Interlacing was devised as a method of improving image quality of video transmissions without increasing the bandwidth required to transmit the signal. In purpose it is analogous to video compression. Interlacing works by splitting an image up into horizontal lines. Instead of displaying all of the lines with each frame, it only displays half of the lines. "But wait!", you say, "if interlacing only displays half of a frame at a time, shouldn't I be able to see half of the frame missing?" Well, my friend, that is where the trickery comes in! You see, instead of displaying every line down the image from the top until it reaches halfway, *every other* line is displayed. One group of every other scanline is called a "field". The displaying of even fields (2, 4, 6, ... 480) and odd fields (1, 3, 5, ... 479) is alternated at 59.94 times per second. When watching this on an interlaced-scanning CRT device like a television, the fields alternate being displayed so fast that we can't tell the difference, and we perceive 29.97 *frames* of video per second. "Well, that's fine!", you say, "if I can't tell the difference, why worry about it?"

Well... interlacing becomes a problem when an interlaced video is viewed on a progressively scanning display (one that scans one line after the other from top to bottom, instead of every other line, like a television would). Most modern displays such as LCD and CRT computer monitors, plasma televisions, and LCD HDTV displays, are progressive. When watching interlaced video on a progressive display, we still perceive 29.97 frames per second, but now we are seeing both of the video's fields at the same time. The result is that we are seeing two temporal samples with every frame, each image of each time-point displaying alternately on each line of horizontal resolution. If the video has an object in frame that is moving quickly, the image contained in one field could differ significantly from the image in the other field. This results in a "combing" effect over objects in motion, because every sequential line of resolution is displaying first one, and then another image. Deinterlacing techniques must then be resorted to to remove these artifacts. Interlaced video reduces effective vertical resolution significantly.

## **Pull-down** ( see <http://en.wikipedia.org/wiki/Telecine> )

Pull-down is a method to convert 24 frames per second progressive frame-format footage (i.e., film: 24p) into the 29.97 (60i) standard of video. The basic process is as follows: First, the 24fps footage is slowed down by .1%, to 23.976 frames per second. Then a "Pull-down" or Telecine is applied to the footage: because the ratio of 23.976 to 29.97 is exactly 4 to 5, there are four frames of "film" source footage for every 5 frames of video. This means that 1 new frame must be created in the 24fps footage to match the frames per second of video, while preserving the duration of the original footage. 3:2 pull-down essentially takes the 4 progressive frames from the 24p material and interlaces each frame to create a total of 5 frames, two of which contain interlaced duplicate frames (see image below from wikipedia). Footage with a 3:2 pull-down contains all of the original progressive frames, with 2 frames of every 5 containing duplicate fields. All of the original 4 out of 5 progressive frames can be easily recovered. When video with a pull-down is converted into regular interlaced video, the original progressive frames (and all of the associated vertical resolution) are destroyed.