

# Adobe After Effects

# Adobe Photoshop

## The "3D Picture Trick" - by Daniel Brown, Adobe Systems Inc.

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Inspired completely by Patrick Siemer - [www.tapeandglue.com](http://www.tapeandglue.com)

There are a multitude of effects within the aptly-named After Effects. Particle simulations, depth tricks, 3-D motion, procedural animations of every kind imaginable. Yet, one is reminded of a simple fact - a great use of simple technology can steal the show over lightning and laser cannons, explosions and "Matrixware".

This tip consistently gets more oohs and aahs than just about anything else in After Effects. Why? Because it reminds us of the point above - the music isn't in the piano and creativity isn't in the box with the software. Hopefully, this will give you some ideas for thinking "outside the software box".



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## The “3D Picture Trick”

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Okay, fair warning... Like so many things, this trick looks easier than it is. That is to say, the mechanics of the effect are fairly easy – you take a photograph, cut out the people and place each of them on their own layer in Photoshop, bring that layered Photoshop document into After Effects, stagger the layers in 3-D, then animate a camera around it. But there are many steps along the way that can ruin the effect. Here are some guidelines to keep in mind...

**1.** Pictures with several levels of depth – but not too many – work best. A bad example is a photograph of a painting framed on a wall. There’s just not a lot of depth there. On the opposite end of the spectrum is a picket fence with 75 levels of depth, one for each picket. If you want to spend the time to isolate each of the pickets, that’s up to you. (For the record, I would use one picket and duplicate it.) An image with 5-10 layers is probably a good range.

**2.** Since part of the work to be done involves restoring the background behind the people in the scene, your cloning/rubber stamp skills will be put to the test. Part of what makes this effect believable is how well the background behind the people is reconstructed. In some areas, you may not have a background to copy from so you’ll need an artistic eye. (Another way of saying this is you’ll quickly learn how much you can get away with. Unlike a still image, your audience will be somewhat forgiving because the image is in motion.)

With those two caveats out of the way, this is an amazing effect and not terribly complicated to set up.

First thing’s first. You’ll need an image. Older images seem to work best (probably because your eye doesn’t expect to see an old image in 3-D), but just about any image will do. You’ll want this image to be larger than your final output format (such as video tape or DVD) because you’ll need extra image data for panning and zooming. (This image is 1988 x 1381 so I can zoom in to a little more than double actual size and still be at less than 1:1.)

Okay, now comes the tough stuff...

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**Step 1** – Analyze your image and plan how you are going to separate the elements from the background. (Come to think if it, this is good advice for any Photoshop project. Ponder it for a while, take a walk, get away from the computer, then come back. It works wonders.)

Open the image in Photoshop. Now, before you start selecting anything, be clear on what you want to isolate and think about the structure of the image. A good example in this image is the woman on the right. She has her hand on a chair. Now, while the chair and table are \*technically\* behind her, having them move independently of her would be tricky to achieve. So, I established early on that she and the table would move together. Since she's not that far in front of the table, the perspective should be okay.

When you're ready, begin selecting elements in the image, and remember that Command-J or CTRL-J will “Jump” a selection to a new layer.

(Note that I didn't go into long discussions about how to select objects. That, my dear readers, is an art form unto itself and beyond the scope of this tutorial.)

**Step 2** – With each of the elements in their own layers, it's time to clone in the background. (Just because you've separated elements into their own layers doesn't mean they're gone from the background.) This part is the most challenging and will be different with every image you use. General tips are to watch for “fringes” when you cut something dark out of a light background. You'll often get a light halo around black edges, and dark halos around lighter areas. You can get rid of this pretty easily using the dodge or burn tool (depending on whether you need something darker or lighter). This will retain most of the detail while getting rid of the unwanted fringing. For a dark halo, set the Dodge tool (looks like a black lollipop) to “Shadows” and play with the “range” value. For a light halo, set the Burn Tool (looks like a hand making an “O”) to “Highlights”. In each case, stick with the outer edges of the layer.

**Step 3** – This is actually a 2a but, while it's a lofty goal to completely remove each element from the background and fill in the result as much as possible, keep in mind that your elements probably won't be moving very far. Grab the move tool occasionally and slide your layer around a few pixels left and right, and maybe up and down.



A sure giveaway that you've cut something out of a background. The dark edges around her collar can be treated with the dodge tool set for shadows.

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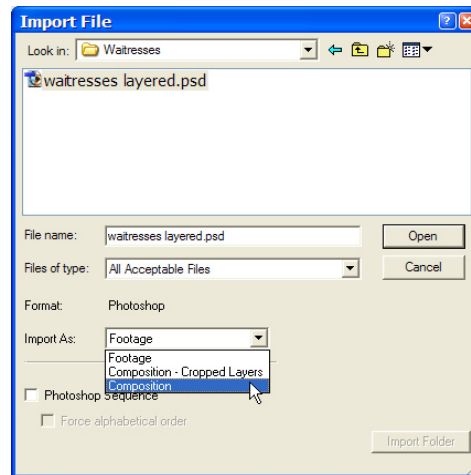
## The “3D Picture Trick”

**Step 4** – When you’re convinced you’ve got all the pieces the way you want, save the file as a PSD.

**Step 5** – If you don’t already have After Effects, go purchase a copy. Then, launch After Effects.

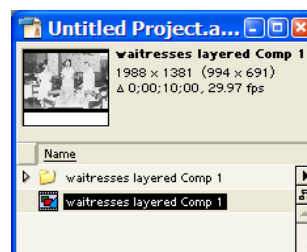
**Step 6** – Import your PSD file. BUT! Before you click OK in the import dialog box, make SURE you choose to import the file as a Composition. Doing this will import all of the layers at once, and create a “comp” with the layers in the same position they occupied in Photoshop. (I’ve watched people who were unaware of the “As Composition” option and attempt to do this layer by layer... It’s not pretty.) For you lucky After Effects 6.0 owners, choose “Composition – Cropped Layers”. This will respect the actual size of the data within each of the layers.)

**Step 7** – After Effects will import the individual layers from the PSD file, create a composition, and place of the layers in that composition in the same order, in the same position, and with the same naming convention used in the Photoshop document.



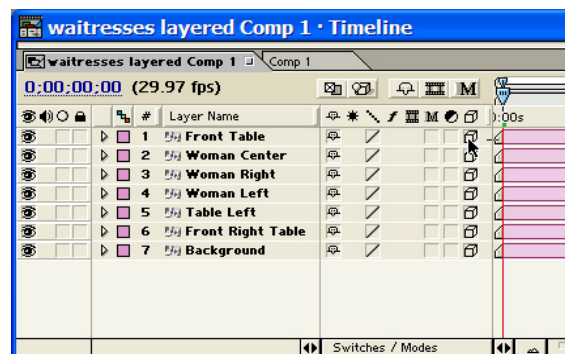
When you import the Photoshop file, make sure you choose to import it as a Composition.

You should now have two entries in your project window – A Composition and a folder, both named after the PSD file you imported. (The Composition and the folder both contain the layers from the Photoshop file. The Composition is the layers assembled as a stack, the folder is simply the individual layers contained in the Composition. Hence, the folder is more of a project organizational thing.)



**Step 8** – Double-click the Composition to open it. You should see all of the layers in place. Note that After Effects retains Photoshop layer names. (LAST MINUTE UPDATE: After Effects 6 retains layer sets from Photoshop, retaining them as nested compositions.)

**Step 9** – We need to enable 3-D for all of these layers. In the 3-D column of the timeline, make sure all of the checkboxes are enabled. This step simply enables 3-D transformations on 2-D objects. Now we can rotate and/or position the objects in 3-D.

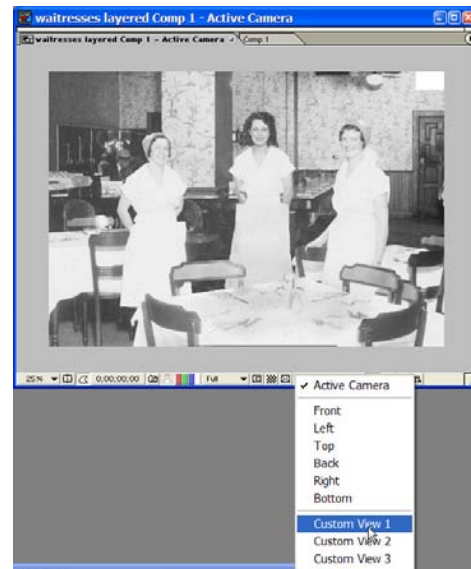
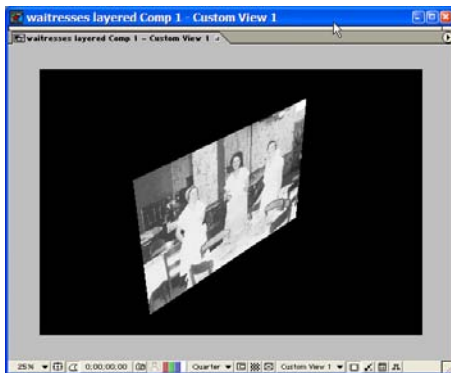


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**Step 10** - Okay, the good news is that all of the objects are in 3-D. The bad news is that they're on the same Z-plane. (A fancy way of saying that there's no space between them front to back, essentially flat.) What we need to do is stagger them in Z-space to give them some depth.

To see this, switch to “Custom View” 1 option on the bottom of the composition window, which probably says “Active Camera” at the moment. (You can also switch views under the View menu, View > Switch 3D View > Custom View 1). Custom View 1 is essentially a camera positioned up and to the left of the composition. Switch to this view, and you should see something similar to this.

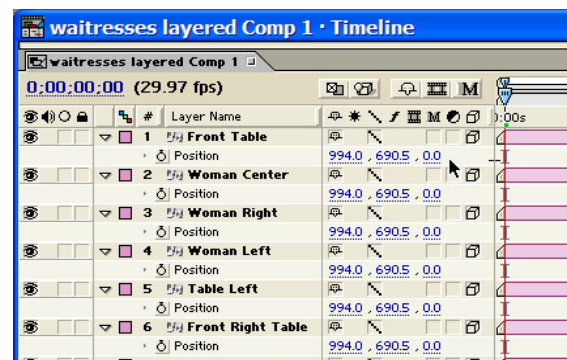


Switching between different views, in this case choosing Custom View 1.

Note that though the elements have been isolated from each other, they are still on the same plane in space so you're not getting much in the way of perspective.

**Step 11** - If you select all of the layers, and hit the “P” key, After Effects will reveal the Position information for all of the layers. Notice that all of the layers currently have exactly the same position values for X,Y, and Z. (These are the three blue underlined values to the right of the word “Position:”) We're going to focus mainly on the Z dimension.

**Step 12** - For the purposes of this example, I'll keep the numbers fairly simple. Starting with the Front Table (the topmost layer), the Z values for each layer are -320, -220, -120, -75, -60, -122, and the background should be at zero. Notice that these are all negative numbers (with the exception of zero of course). Type each of these numbers into the third column of blue numbers, the first two (X and Y) will remain the same.



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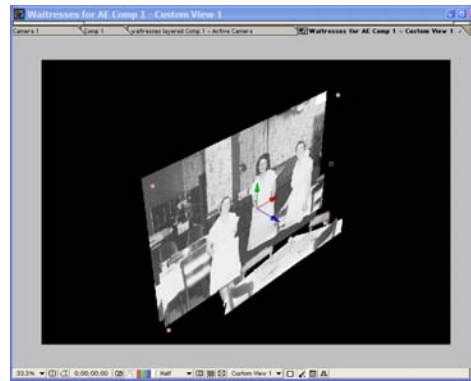
**Step 13** - You should now see - however subtly – that there is space between each of the layers. While it takes a bit of depth to do “real” 3-D, what we’re after here is a fairly subtle but appreciable perspective change. You can get a feel for what this while you’re in “Custom View 1” by selecting the Camera Orbit Tool. (Appropriately enough, it’s an arrow orbiting a small sphere in the toolbox. You can get to it by hitting the “C” key. If you don’t see it at first, additional hits of the “C” key will step through the various camera tools.)

With the camera orbit tool selected, click and drag around in the composition window. If everything has been set up correctly, you should see all of the layers rotating in 3-D space. Naturally, if you rotate the layers too far, you’ll see the layers edge-on. This is not a good indicator of how this file will actually be used, which brings us to:

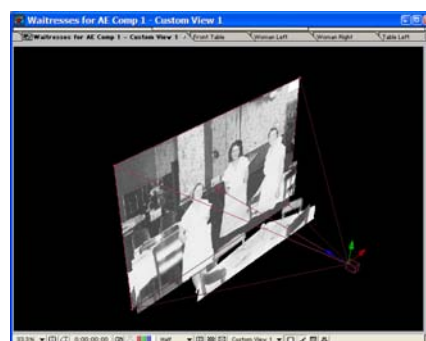
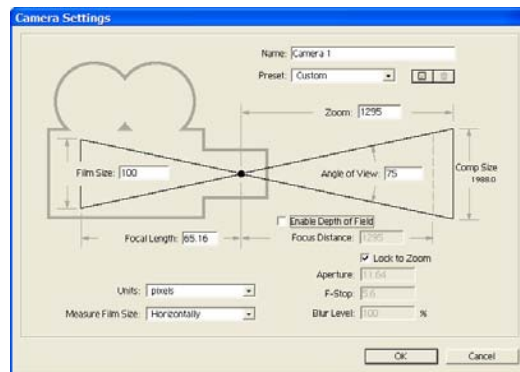
**Step 14** – Understanding how a file like this will actually be used. While the camera orbit tool gives you a good feel for the fact that the layers are in 3-D, it’s not a very practical way of viewing the layers for the final product. In fact, the final rendered example has very little (if any) rotation of the camera at all. Most of the effect you’re seeing is panning and zooming, not rotating. You don’t need to rotate the scene very far to spoil the effect.

What we need now is a camera we can move over time. Under Layer > New > Camera, we’ll create a new camera, one that we can animate over time. In the New Camera dialog box, set the Angle of View to 75, and click OK (Ignore the other settings for now).

You should see a camera appear in the composition window pointing at your layers. (It’ll be disguised as a simply 3-D wire-frame box with a large wireframe pyramid attached to the front.)



The same layers, ever so slightly staggered in 3-D space.



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**Step 15** – Well, we've created a lovely camera, but currently we're looking AT the camera rather than THROUGH the camera. In the pop-up menu at the bottom of the comp window (Or from the View Menu > Switch 3D View), we'll switch from "Custom View 1" to "Camera 1". Choosing this will show what Camera 1 is seeing.

**Step 16** – From here, it's all about animating the camera. The first thing I did is to zoom in on the woman in the center. Using the "Track Camera Z" tool (which will move the camera closer to or farther from the layers), I moved in close to the woman in the center. Then, using the Track Camera X,Y tool, I moved up slightly to center her face in the window. (Again, the "C" key will switch between the various Camera tools. The Camera X Y tool has arrows up/down and left/right, the Camera Z tool has arrows facing toward you and away.)

**Step 17** – This is where I want the camera to begin, so I clicked on the Camera 1 layer and hit the "P" key, which reveals all of the position information for the camera, and clicked the stopwatch to animate the position property (locking in the current values as the start of my animation.)

**Step 18** – Moving to about 8 seconds down the timeline, I simply used the Track Camera tools again to position the camera back and a little to the left thereby centering all three women in the scene.



This is the start of the animation. The camera has been zoomed in and panned to center this woman in the frame.



This is the end of the animation. The camera has been zoomed back and positioned slightly to the left.

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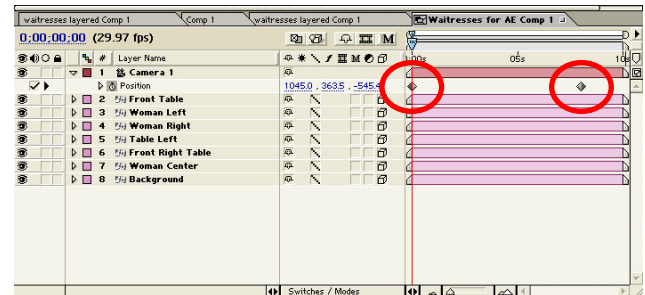
**Step 19** – The above is just fine if you’re doing very robotic moves, but most documentary films pan photos very organically. You “feel” the weight of the camera because of the way they move the image.

That step, that “make magical” switch (or at least part of it) is the “Easy Ease” function in After Effects. Essentially, it tells After Effects to take its time about getting the camera up to speed, and about slowing it down again once it has moved.

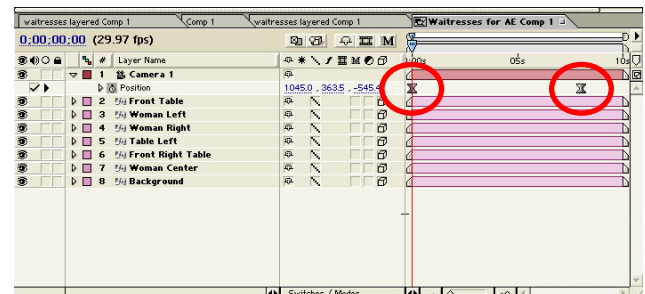
To achieve this, select both keyframes for the camera and choose Animation > Keyframe Assistant > Easy Ease. (Note that I took a bit of a shortcut here. If there were other keyframes before the first keyframe, or after the last keyframe, we’d want to be more selective about how we did the interpolation. Easy Ease essentially means “ease gently into this keyframe, AND ease gently out of this keyframe”. In some cases, you may want to only ease into OR out of a keyframe, but not both. In those cases you would choose Ease in, or Ease out.)

**Step 20** – “Season to taste” - Naturally, there are THOUSANDS of adjustments you could make to this. (i.e depth of field, manually repositioning elements in the scene to force more perspective, insert the resulting composition in another composition that pans the animation, auto-orienting the objects toward the camera, and for that matter, this can extend into an entire animation mechanism.) but at its core, the beauty and elegance of this tip is its simplicity. Now, take this basic lessons and go make something cool!

A special thanks MUST go to Patrick Siemer whom, while probably not the originator of moving elements in 3-D, first showed the team how this could be done in After Effects. Thanks Patrick! (See Patrick’s work at <http://www.tapeandglue.com> )



These are the two keyframes we’re modifying. Currently, they’re “Linear” keyframes, making them appear very robotic.



Here, we’ve changed them to “Easy Ease” keyframes meaning that the camera will begin moving slowly, and then ease to a stop.