

Cartoonification

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Tips for getting better results from “cartoon look” plug-ins.

For the past several years, a popular trick has been to take live action footage and treat it to look like an animated cartoon. The essence of what once was a labor-intensive process has long since been distilled into plug-ins that are available for several programs – one even comes free with After Effects CS4. However, just slapping these plug-ins at their default settings onto any piece of footage rarely gives satisfying results. In this article, we will discuss which clips are better candidates for cartoon treatments, walk through using the Cartoon effect that comes with After Effects CS4, and suggest ways to pre- and post-process the footage to achieve more interesting results. The After Effects tutorial portion of this article uses Artbeats clip TEL130 HD from their Teen Life HD collection, which is available free to their newsletter subscribers in March 2009; see the bundled After Effects CS4 project files for compositions that contain some of the treatments discussed herein. We will also include examples from several other clips to give you a broader idea of the possibilities.

Figure 1: Clip TEL130 HD from the Artbeats Teen Life HD collection, which we will be using later in the tutorial portion of this article.



Figure 1

Contrast versus Clutter

To better imagine what type of clips would work best with cartoon effects, it helps to understand what they are doing underneath the hood. These plug-ins are looking for edges – lines of high contrast in color or luminance – to decide how to divide up an image. Areas between edges get “posterized:” either filled with solid color, or reduced to bands of just a few colors rather than smooth gradients and color transitions. The edges themselves are then optionally stroked to insinuate pencil or ink, or to add contrasting highlights.

As a result, clips that work best are those with a few (but not too many) clean edges plus large areas of different colors in-between. Other clips may be less successful. For example, if a clip is full of small details (i.e. edges), it may just fill up with virtual ink. If the shot is mostly monochromatic, then the areas between edges will be filled with mostly the same colors. The illustrations in this section will give you an idea of what works, and what you might be able to get away with.



Figure 2a



Figure 2b

Figure 2: This playground shot (Artbeats clip KS132 from their Kids of Summer collection) is nicely composed, but has some issues with the abundance of small details in the leaves in the trees and on the ground, plus similarity in color between the shadows and the bars on the swings. Although our brains can easily pick out these subtle differences in the normal video (a), once the number of colors has been reduced by a cartoon effect (b) much of the clarity is lost.

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Figure 3: This shot (Artbeats clip PK106 from their Portraits: Kids collection) also has an abundance of leaves, but there is more color variation between the leaves. It also has contrasts in size of the details, plus large areas of color between many of the edges (for example, her face and coat). As a result, even though the exact same settings were used as for the playground shot, clarity is actually improved by the addition of a cartoon effect (b).



Figure 3a



Figure 3b

Figure 4: Even though there is a lot of detail in this man's beard (Artbeats clip FWR102 from their Faces of the World collection), the large sections of relatively flat color in his face, turban, and the wall and pillar behind provide great contrast. The application of a cartoon treatment (b) simplifies details in the face and background while maintaining the details in the beard.



Figure 4a



Figure 4b

Figure 5: This shot (Artbeats clip TE103 from their Teens on the Edge collection) has such vivid colors and strong lines that it is practically a cartoon before treatment (a). This allowed us to really reduce the number of colors in the fill areas (increase the posterization) to get a stark treatment that is still "readable" to the eye (b).



Figure 5a



Figure 5b

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Cartoon in After Effects CS4

One of the new features introduced in After Effects CS4 was the Stylize > Cartoon effect. It was developed as a technology demonstration of their new Pixel Bender toolkit, which enables third parties as well as motivated end users to create their own effects. Cartoon has been much maligned, partially because its default settings don't look that good. But as with any effect, the secret is to go beyond the default settings, plus to combine it with other effects. Note that with Cartoon, a small adjustment can suddenly cause a big change; it helps to know where the sweet spots are.

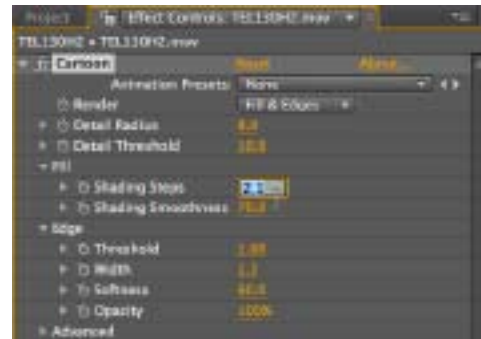


Figure 7a



Figure 6

Figure 6: The After Effects CS4 Cartoon effect applied to the HD version of Artbeats clip TEL130. Its default settings are not too exciting: the edge lines are too thick (notice the unflattering results around the nose and mouth), and the fill colors are not posterized enough, looking too much like the original shot.

The first parameter to reach for is Fill > Shading Steps. This is what sets the level of posterization in the color fill areas. Although the default is 7, the sweet spot for most clips is between 2 and 4, with each 0.1 increment yielding a new combination of highlights and colors. (Remember that in After Effects, you can get finer increments by holding down Command on Mac or Control on Windows while scrubbing.)



Figure 7b



Figure 7c



Figure 7d

Figure 7: Slowly reducing Cartoon > Fill > Shading Steps (a) to the lower end of its range yields a variety of variety of looks. Here is the same clip with Shading Steps set to 2.1 (b), 2.5 (c), and 3.4 (d).

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Another touchy parameter is Shading Smoothness. The default is 70. At values from about 75 on up, it all but overrides Shading Steps, returning to a too-realistic look. In the 60s, the results are quite psychedelic, resembling a trippy color photocopy or an inspired artist with a fistful of colored pencils. Once you get into the 50s and below, you will get the bright, flat colors more normally associated with Saturday cartoons or Sunday comics. These results are modified by the Detail Radius and Detail Threshold settings: For example, with Shading Smoothness set to 60, higher Detail Threshold settings soften the image to look like a color photocopy that has been reduced by several generations.

Figure 8: Shading Smoothness settings under 60 create classic comic or cartoon looks (a); settings between 60 and 70 create more psychedelic results (b). These results can be softened by increasing the Detail Threshold value (c).



Figure 8a



Figure 8b

The other half of the look is the edges. Edge > Width defaults to what is often too high of a value to recreate pencil or ink drawings – especially on standard definition footage. We usually raise Edge > Softness into the 90s (don't go to 100, or the edge outline will disappear altogether), then lower Edge > Width to get the line thinness we want. Or, you can go in the other direction: high values take on the appearance of a fat marker rather than a thin pencil or pen. Edge > Threshold sets how many edges get stroked, and Opacity can be reduced to further minimize their appearance. The Advanced section contains additional ways to refine the edges.

Pre- and Post-Processing

Cartoon works with the color and contrast in the underlying footage. Not all clips may have the “ideal” color and contrast in them (and when talking about cartoons, “ideal” does not necessarily mean “realistic”). Therefore, we almost always precede Cartoon with a Levels effect to adjust the white and black points as well as the gray balance in a clip, and follow it with some form of color correction to bend the colors in the result.

Apply Effect > Color Correction > Levels to the clip, and drag Levels above Cartoon in the Effect Controls panel, keeping Cartoon enabled. If necessary, drag the Effect Controls panel wider so that you can see the entire width of Levels' Histogram display. Move the Input Black and White Point controls (the left and white triangles directly underneath the Histogram) inward to line up with where the Histogram's undulations



Figure 8c

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Figure 9a



Figure 9b



Figure 9c

Figure 9: The default Edge settings are often too thick on standard definition footage (a). Increasing Softness followed by decreasing Width often helps (b). Or, increase Edge > Width (and decrease Fill > Shading Smoothness) to create a drawn-with-markers appearance (c).

start and stop. This will maximize the contrast in the original clip. Now drag the Gamma control – the gray triangle under the middle of the Histogram – back and forth while watching the result in the Comp panel. This moves the gray point in the underlying clip, affecting the posterized colors produced by Cartoon. Moving Gamma to the left in particular is effective for lifting details out of the shadows and otherwise lightening dark objects. You can replace Levels with Curves for even more control over the balance of luminance values in the clip.



Figure 10

Figure 10: In this example, we adjusted the Gamma to help “lift” the dark green shirt worn by the girl on the right.

Next, apply a color correction effect such as Hue/Saturation to the clip, leaving it in its default position after Cartoon. Rotate the Hue to get different color combinations; increase Saturation to add some vibrancy back into muted tones. Other effects provide more control: For example, Color Correction > Channel Mixer allows more subtle shading of the cartoonified result.

Figure 11a



Figure 11b



Figure 11c

Figure 11: Applying Hue/Saturation after Cartoon makes it easy to create otherworldly color combinations (a). More subtle color correction effects such as Channel Mixer (b) can be used to create more refined alterations (c).

Zooming Out

Another major part of the “cartoon look” is the frame rate. Field or frame rates above 48 fps are known to look more like reality (think news programs or sports), while rates under this magic number look more dreamlike (think film). Unless you’re going for the mental disconnect of realistic motion combined with cartoon shading, consider using either progressive scan footage, or lowering the composition’s frame rate further to a cartoon-like 12 fps or a web-like 10 or 15 fps. You can lock in this rate in After Effects by opening Composition > Composition Settings, clicking on the Advanced tab, and enabling Preserve Frame Rate.

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Chris and Trish Meyer are the founders and owners of Crish Design (formerly known as CyberMotion), an award-winning motion graphics studio that has created a wide variety of work for film, broadcast, corporate events, and special venues. One of the original development sites for After Effects, they have just released the second edition of the popular beginner’s book, After Effects Apprentice.

Of course, after you’ve made all of these adjustments, it’s a good idea to save your work, duplicate your composition (to keep a copy of your current settings) and then go back to the beginning and try new value ranges for Cartoon. You may find that it takes you down a completely new path.