

There was a discussion in another thread about making an object appear through water, and in a private thread someone asked me about making an actor "appear" through a fog covered background. So I decided to write a short tutorial on the use of the Liquid Matte Track.

A Brief History of Mattes and Masks

In the film world, mattes were (and in some cases still are) cutouts that block part of a projection from showing through. In order to composite two films together, you needed to be able to show part of one film and part of another. The simplest case involves showing a fake background (e.g. the skyline of ancient Greece with the temples etc.) What they would do is paint the background on plate glass, not painting any part that should contain the rest of the set and the live action. You could then literally shoot the film through the glass, lining everything up, and you'd have your action taking place in ancient Greece. However, that limited the camera to no movement and restrictive exposure settings (but they really did it this way early on).

The next step was to film the background, properly lit, against a black background. Then they'd film it again, this time against a neutral lit background and no front lighting. The film would be developed so that the lit background came out white, and everything that was painted (opaque) came out black. Then they'd use that film to make a negative (opaque areas are white, and the clear areas on the glass are now black). These two films are the masks needed for compositing. Remember that white is nothing but clear sections on the physical film media.

To composite the scene, you'd optically project your live action through the positive (first) mask. This blocks the unwanted parts of the live action scene from showing through. Then you'd optically project the matte painting through the negative mask. This blocks the unwanted parts of the mask (anything that isn't painted) from showing through. Then you'd combine these two projections onto a third film and there's your composite. Later on, they started using a blue screen. To composite an actor on a background, you'd film the actor against a blue screen. Then you'd project that film onto another film using a blue filter onto film stock that was only sensitive to that color blue and develop it as black and white. You could then take that black and white film and get the negative (the positive and negative masks, also known as female and male masks). The process is otherwise the same of using the masks to prevent portions of the foreground and background from showing through so they could be optically combined.

So much for the history.

Using Mattes in Liquid

There's no difference is using a matte track and using video with an alpha channel. In fact, all the matte track does is create an alpha channel for the source track. It is however easier to manipulate a black and white image on a matte track than it is to manipulate the alpha channel in a video. You can apply other effects directly to the matte for special effects, edit the matte by hand, etc. If you deal with film to video, you may also end up being sent the black-and-white matte films along with the source films for compositing.

The technique of using the matte track is simple. Right-click on the header for any track and you have the option for adding a matte track. Each track can have one matte track. On the matte track you place a grayscale image (video or still). If the image has an alpha channel, that's all you need to do (the alpha channel will be used as the mask). If not, then you also have to add the Real-Time Track Matte effect to the clip(s) on the matte track.

Black areas of the matte will prevent the video from the source track from showing through. White areas will allow 100% of the image to show through. A 50% gray area will allow 50% of the source track to show through, so you can use grayscale mattes to control transparency. For the remainder of this tutorial, we'll be using only pure black-and-white mattes.

So let's say you have an image of a white circle within a black field. If you use that on a matte track, then the source video will only show through the white circle. Any tracks below will show in the black field. So far, this seems to be just another way of altering the shape of a track before overlaying it on another track. So let's get a bit more complex.

You want to composite a scene which shows an bat flying toward the camera, through a fog bank, and with a composited background (e.g. here comes the vampire out to get the victim). You start by photographing a stuffed bat against a green screen (or blue screen) flying towards the camera. Or you animate a bat against a green background in your favorite animation application. This is the easy part. Now you want to put the bat in a fog, but the fog has to thin out as it approaches you. You can't simply overlay a clip of fog, or use the Liquid Clouds filter (in the Commotion Effects rack) and fade it out as it fades out across the entire frame. You only want it to fade out in front of the bat as it flies towards the camera (i.e. the closer it gets the less fog between it and you and the clearer the bat becomes).

Take the clip of the bat on the green screen and place it in a new sequence called "Bat". Add the Commotion Green Screen filter (and any other filters needed to make a clean key). . You want to use the Commotion filter as it makes it easier to generate the masks in the following steps. In the Green Screen editor, make sure that the Inverted button is NOT checked.

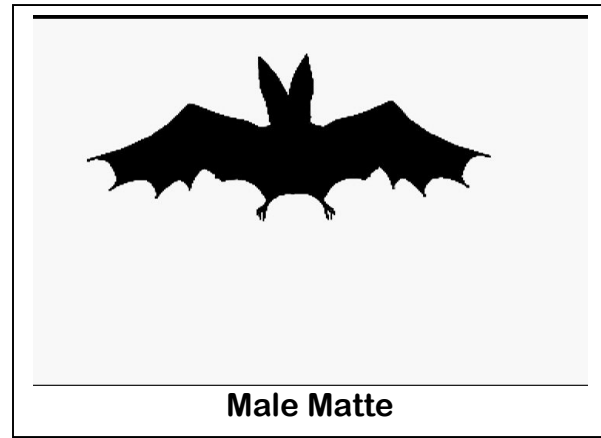
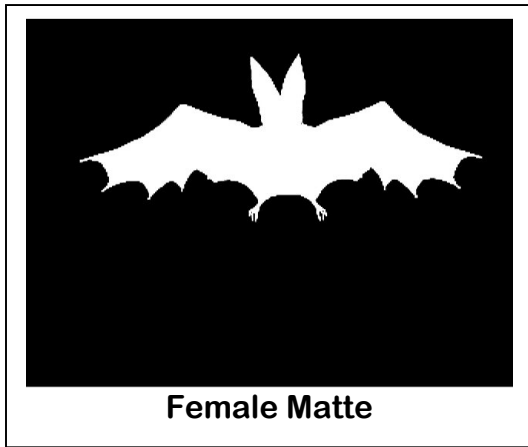


Original clip and keyed Bat sequence

To generate the masks, start by creating a new sequence called "Bat Female Matte". Put the Bat sequence into this clip. It will go in as a container. Right-click on the container and choose Container->Step Into Container. Edit the Green (or Blue) screen filter and change the view from Comp (the composite) to Matte. Exit the editor. What you should now see is the black-and-white matte.

Return to the main level from the container (there's a large vertical button on the left side of the tracks that reads Main Sequence Level).

To generate the inverted matte, follow the steps above and call the new sequence "Bat Male Matte". Edit the green (or blue) screen filter, and select the Inverted Matte button.



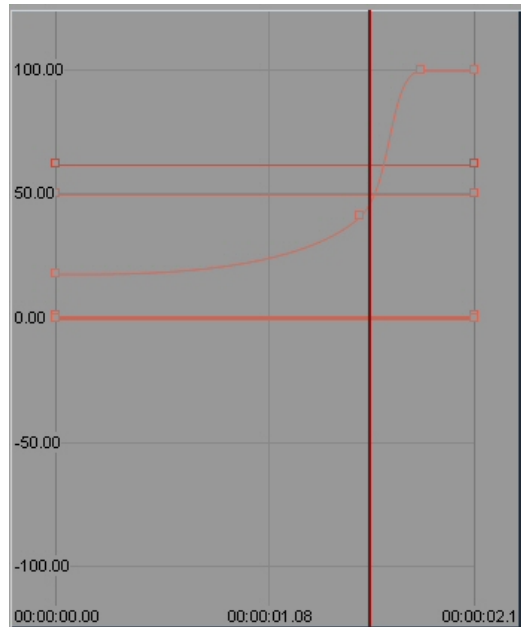
At this stage, you have 3 sequences; Bat (the bat on a blank background), Bat Male Matte (the bat in black against a white background) and Bat Female Matte (the bat in white against a black background). To add the background with the fog, create a new sequence called Bat Composite. Put your background clip into it, and add the Commotion Clouds particle filter. Please note: You cannot change the colors used by the clouds filter as the color ramp control is broken. Change the other settings to generate a suitable fog. Use the Blend with Original setting to allow the background to show through as appropriate. You may also have to change the other settings to get a fog effect that you like.

Right-click on the track header for the background clip and select Add Matte Track. You'll see that a new subtrack is created below the source track, and that the track is colored green. On that track, drop the Bat Female Matte. What you should see in the master viewer is the foggy background with a cutout in the shape of the bat as it flies towards the camera. By default the Track Matte may have it's Inverted button checked. If it does, turn it off or you'll see the reverse of what you want.



Background with Cutout

In the track below the background and matte tracks place the Bat sequence. If you were to view the sequence right now you'd see a clear image of the bat flying towards you. So it's close but not quite there. Copy the Commotion Clouds filter from the Background clip and place it on the Bat container. Edit the Clouds filter so that at the last keyframe Blend with Original is set to 100%. You may also want to change the keyframes for Blend with Original so that it's not a linear change.



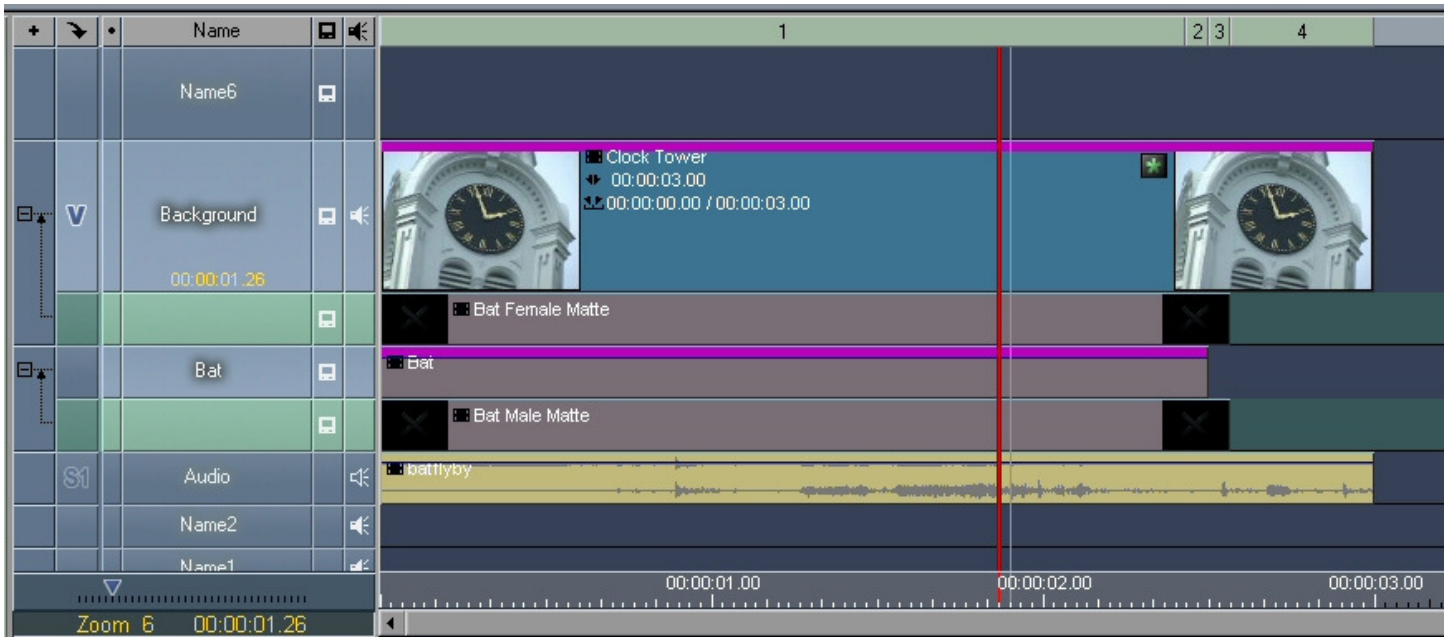
Blend with Original Keyframe Graph

Now we only want this second clouds filter to affect the bat, not the rest of the background (which already has fog). So add a matte track to this track and drop on the Bat Male Matte onto it. Add the Track Matte filter, edit the filter and make sure that the Inverted box is selected. This will key out everything except the bat and the fog over the bat.



Bat with fog and no background

Add a sound effect track for the bat and some eerie music and you're done! The first track has a foggy background with a cutout for the bat. The second track has a foggy bat with no background. As the bat flies towards the camera, the fog in front of the bat clears away, simulating the bat coming out of the fog.



Finished Timeline



Final Composite

Things to note: You should copy the clouds filter from the first clip to the second so that the parameters are the same. This ensures that the same pattern is used at the start for both tracks.

If the foreground clip (e.g. the bat in this example) has partial or full transparent areas, then you need to add another step. Let's say the bat had partially transparent wings. If you used the tutorial above you'd see that instead of seeing the background of the clock through the wings, you'd see nothing. This is because the Bat sequence in the track marked Bat has nothing behind it (see the Bat with Fog and No Background figure above). Even when placed in the final composite, it doesn't have a background (remember that we cut out everything behind the bat on the background track). To fix this, make a copy of just the background clip with the cloud effect on it (on track Background). Don't copy the matte track. Go into the Bat container on the Bat Track and paste the background below the Bat track. This gives the transparent sections the correct background.

Finally, NO BATMAN JOKES!! The example is silly enough as is!