Post Production Pesticide: Final Cut Fly Swatter

By Troy Lanier (link to bio below)

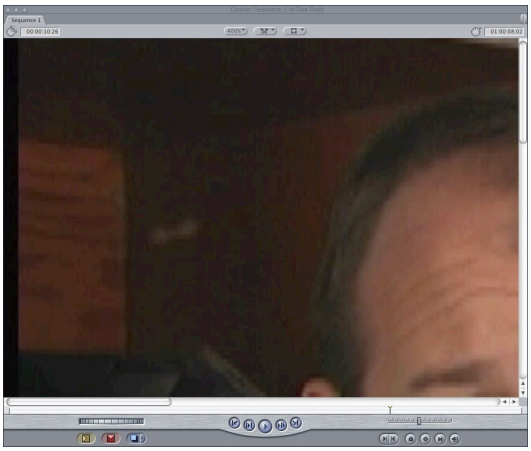
Synopsis:

*The following article shows you how to use Final Cut Pro's **Mask Shape Filter** and **Garbage Matte Filter** to remove a flying insect from a shot even when that flying insect is right in front of an actors moving face. The method has also proven helpful for removing a stray shotgun mic or a boom pole shadow. While more sophisticated tools exist for this type of correction (for example: Combustion), this article sticks with Final Cut.*

The Problem:

While I was editing "DueDads: The Man's Survival Guide to Pregnancy" (www.dadlabs.com/duedads.html) a pretty serious problem cropped up. I came upon a scene in which only one take was worth keeping. And even this take had a problem: there was a flying insect in the scene. Even worse, the insect flew in front of the actor's face. I could either scrap the crucial scene or get rid of the bug. It was time to get out the Final Cut Fly Swatter.

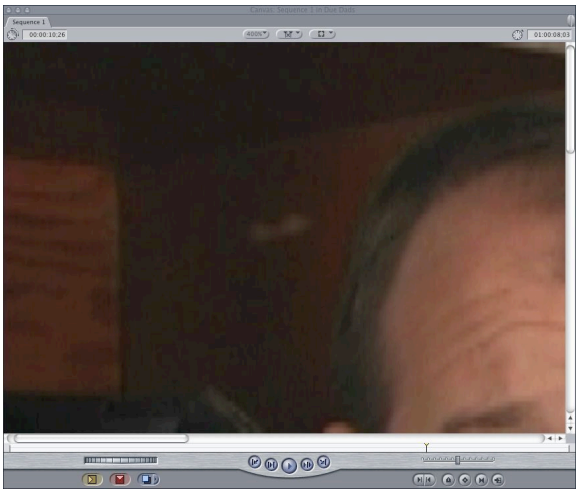
You can see the insect as a white blur in the upper left of this screen shot (fig 1) or the middle left (fig 2). Look near the pink shirted dude's right ear (your left).

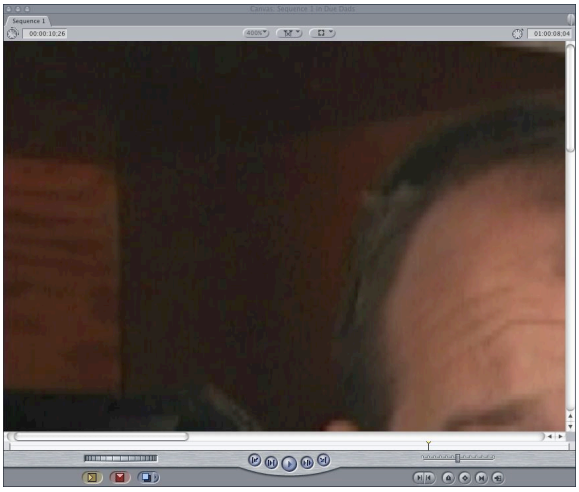


While the insect may not seem distracting in this still, the insect jumps out of the screen when the clip is put into motion. To see the actual clip, click here. To see the corrected version, click here.

As it moves across the screen from left to right you can see the white blur get closer to his head (fig 3 and 4) and then the white blur is suddenly right on top of his hair (fig 5

and 6).

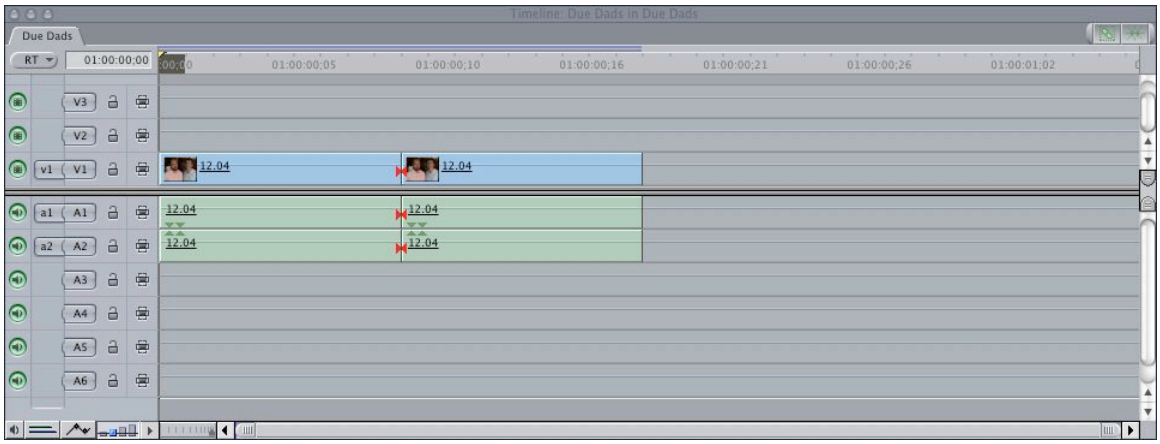




Overview of the solution:

The two methods I describe below both rely on removing an are of the shot in which there is a bug, and then replacing it with the same area a few frames earlier in which there was no bug. When the bug is in front of something that moves from frame to frame, not only must you temporally shift your footage, you must also spatially move it within the frame.

For this exercise I have cut the clip into two sections. In the first section the bug is near his head. This is easier and faster to fix since I can work on a few frames all at once. I can do this because of the static background. In the second part, once the insect is in front of his face, I have to remove it frame by frame.



Debugging Part 1: When the bug is not in front of his face.

First, I needed to remove the region through which the bug was flying.

The black box in the upper left is an area that has been removed from the footage using the **Mask:Shape** filter. In order to apply the **Mask:Shape** filter to your clip, you first double click on the clip so that it appears in the Viewer.

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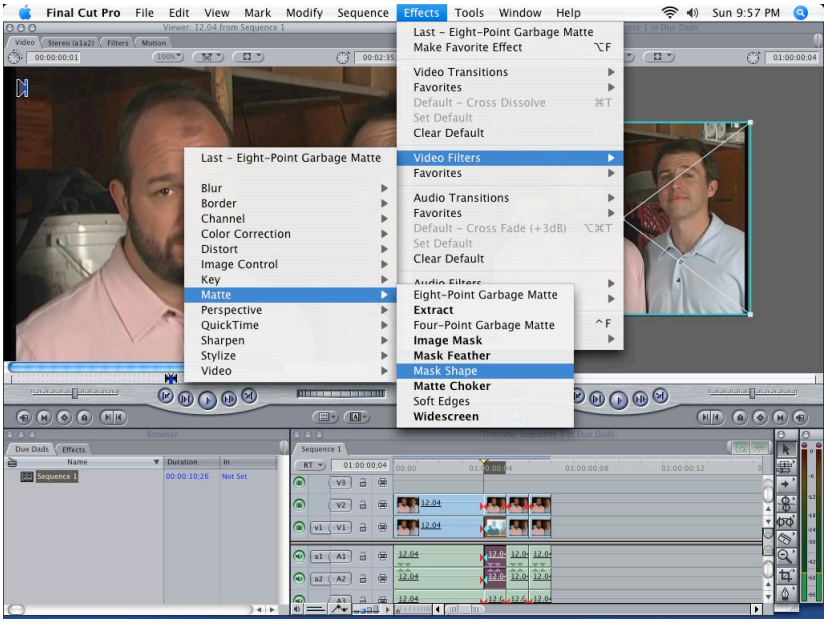
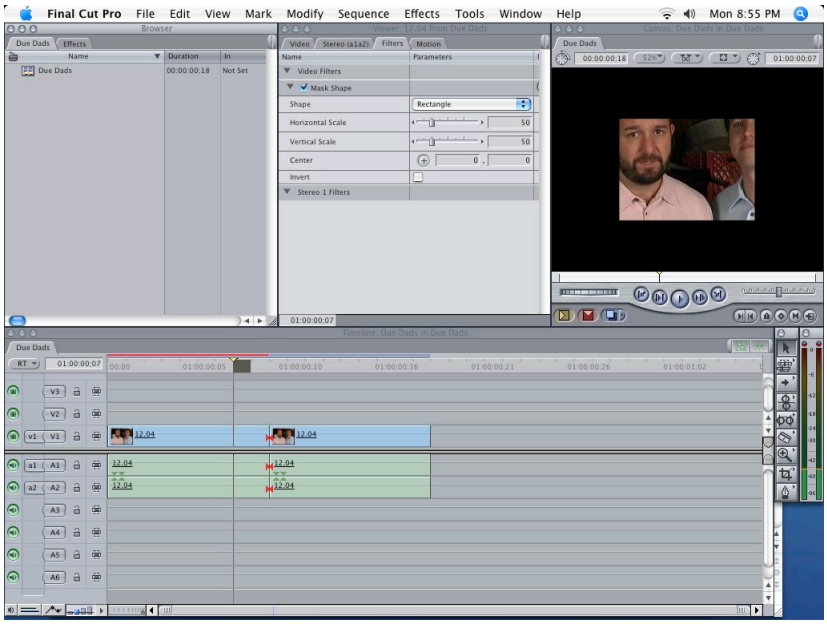
Next choose the filter from the menu shown in fig 10. (**EFFECTS:VIDEO FILTERS:MATTE:MASK SHAPE,** and it will be applied to the clip.

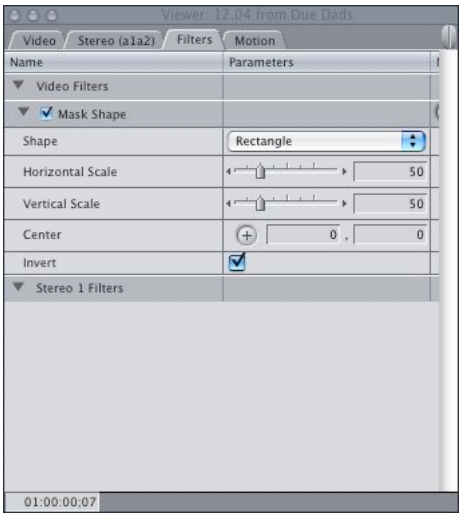


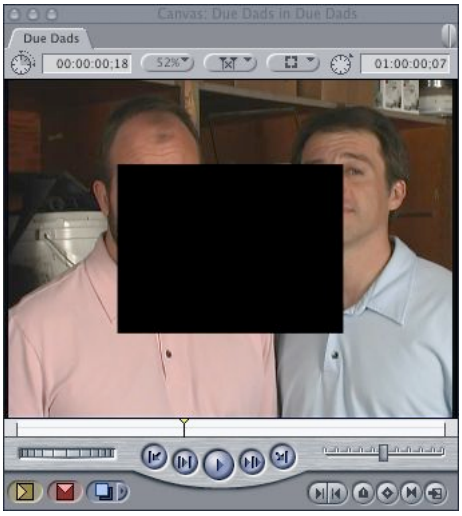
To verify that it has been applied to the clip, click on the filters tab in the **Viewer**.



Use the **Viewer** to modify the filter and then watch the results in the **Canvas**.

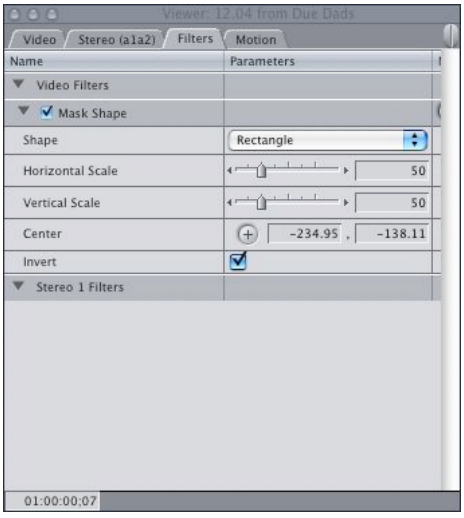
Once the filter has been applied to the clip, first check the invert box.



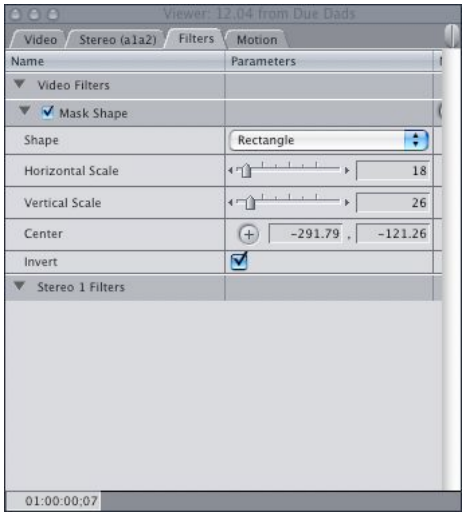


Now click on the plus symbol next to the word Center in your filter tab.

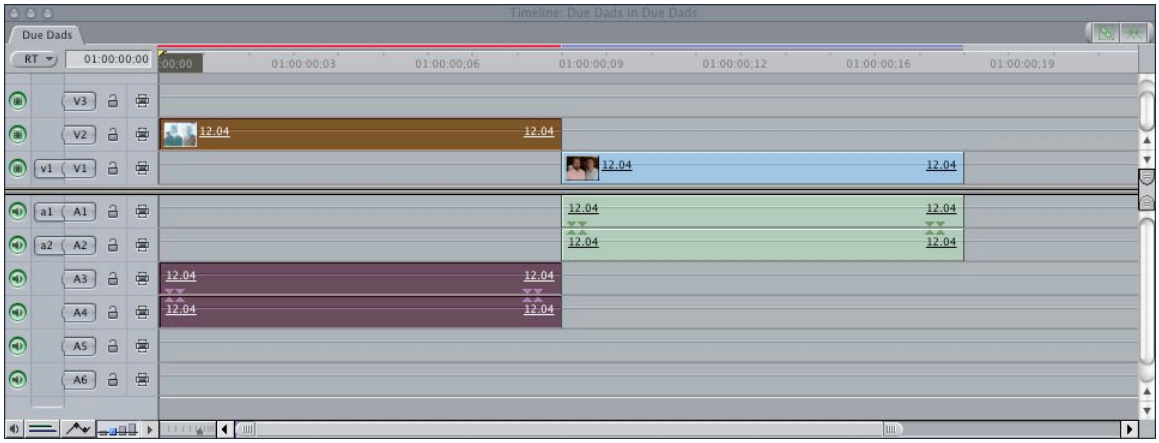
Then move over to the Canvas and click where you want the center to be.



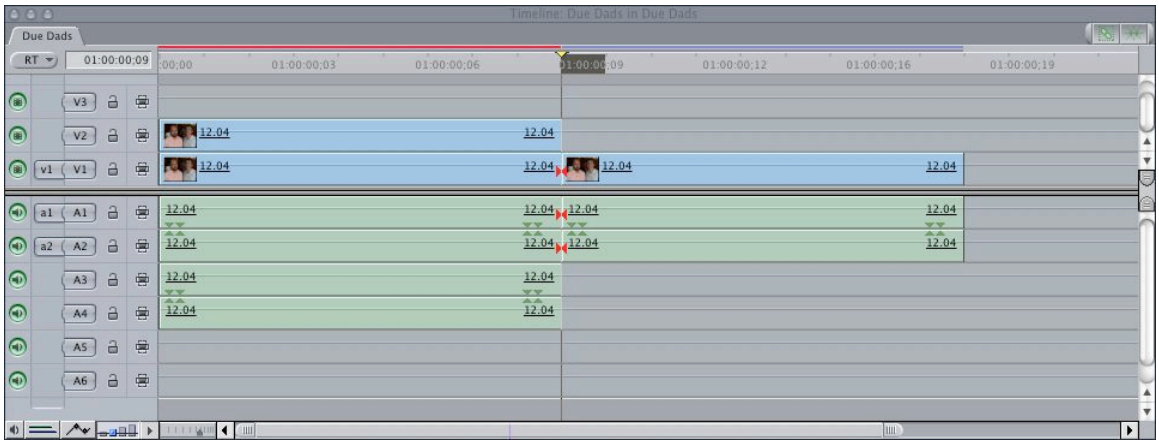
Now resize the box using the Horizontal and Vertical Scales. You can do this three different ways: by actually typing in the numbers, or by using the slider, or by clicking on the triangles.



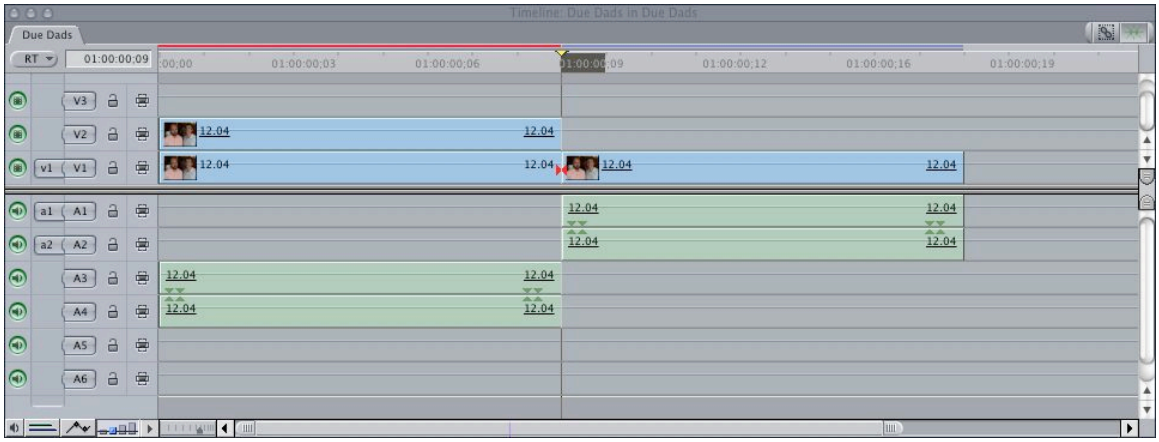
Now that you have the section removed, go to the timeline, select the clip with a single click, and copy it. You can copy by using control click or from the EDIT:COPY menu item or by using Apple C. Now physically grab this clip and move it up to the V2 in the timeline.



Put the playhead at the beginning of this clip and then choose paste. A new clip will now be in V1.



In order to clean things up a little bit, you need to first remove the double sets of audio. Do this by pressing Shift L which allows you to choose the video and audio separately. Highlight the audio in the third and fourth tracks and then delete it. Press Shift L again in order to toggle back to the mode you were in before.



The video clip in V1 still has a filter on it, and we want to get rid of this filter. Double click on the clip in V1 and it will appear in the Viewer. Go to the filters tab, highlight the filter, and then delete it.

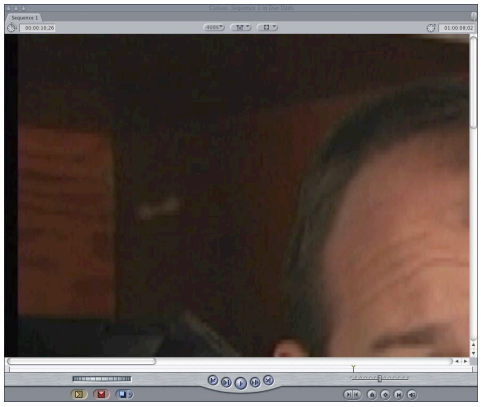
At this point your image seems to be right where you started. Even though the bug has been removed from V2, the missing portion of V2 is backed up by what is revealed in V1: the very bug you were trying to get rid of. The clips in the V1 and V2 are exactly the same shots, just one of them has a hole in it.

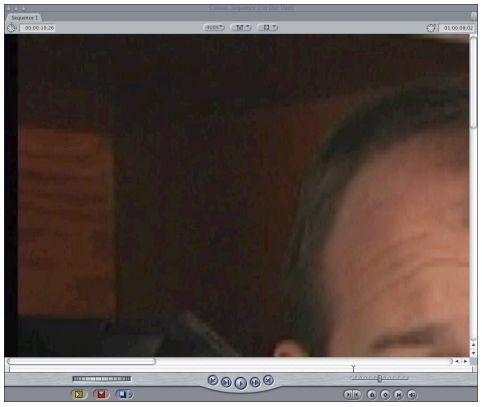
Here is where the fun begins

Select the slip tool from the tool window, or simply press s.

Place the slip tool over your initial clip in V1 and slide the clip left or right by a few frames. You will see the bug disappear. What you have done is slipped either forward or backward in time to a place where there was no bug behind him. A bugless background is revealed through the window you created with the **Matte:Shape**

Here is what the final result looks like.

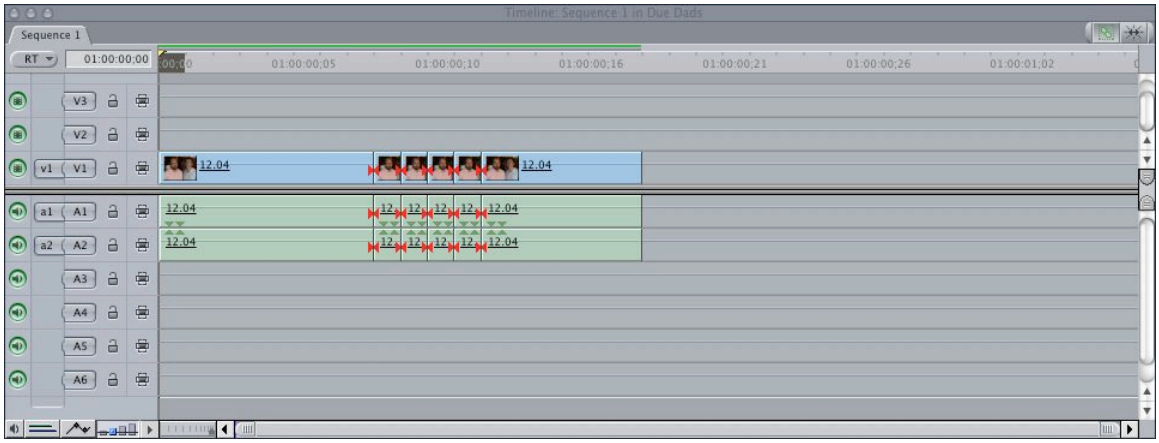




Debugging Part 2

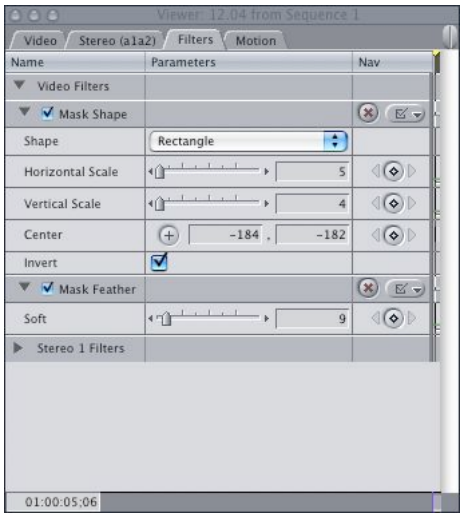
Once the bug is in front of his face, things get a little harder because his face is moving around. You cannot simply block off a large area. Instead you will need to go frame by frame.

Step 1 is to cut up the next few frames into one frame intervals. Do this with the Razor Blade (the shortcut for this tool is b)

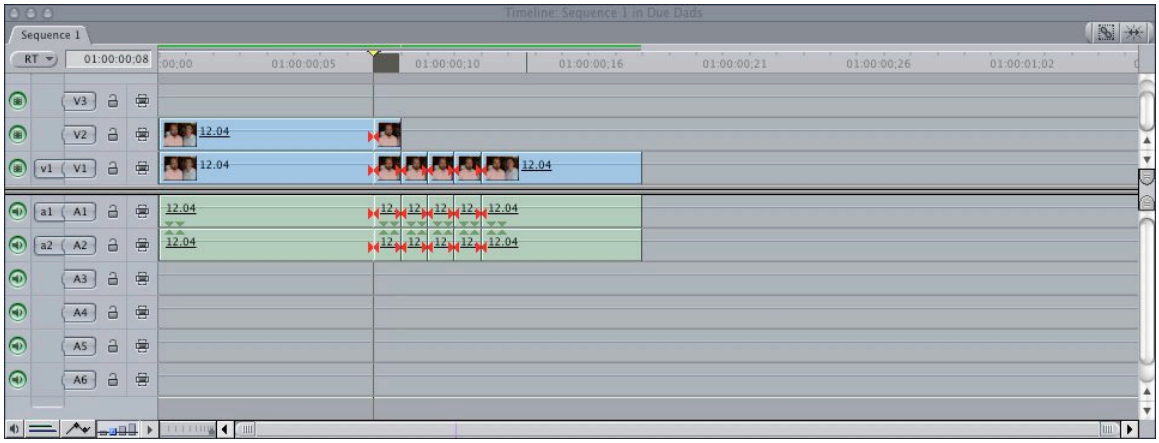


Using the first of the one-frame clips that you have made, isolate the bug just like you did in part one by applying a **Mask Shape** filter. Choose **EFFECTS:VIDEO FILTERS:MATTE:MASK SHAPE** and it will be applied to the one frame clip.

This time also apply **EFFECTS:VIDEO:FILTERS:MATTE:MASK FEATHER**. This will help soften the edges of your trickery – the back will blend in better with the front.



Once again copy this one frame clip. Move the actual clip to V2 and then paste the copied version into V1. Be sure to delete the filters that you had placed on it as well as any doubled up audio. This is all exactly what was done in part 1.



Once again you are right back where you started. Just like in part one, you have taken out the fly in V2 only to have the fly in V1 show through the hole in V2.

And, once again you are going to use the slip tool to move the V1 clip left and right until the fly is no longer in V1. But unlike Part 1, there is an added step.

This time you are only going to slip by one frame. Since we are removing a fly from his hair, we want to put in some hair that that is very similar to what has been removed. The best candidate is the hair from the previous frame or the next frame. It will be similarly lit and in a similar orientation, you hope.

UNLIKE step 1 which had a static background, this time his head has moved and you might end up with something like fig 28 (I exaggerated it to make a point). Since his head moved from one frame to the next, an eye might be showing instead of the hair you need. So you need to physically (as opposed to temporally) move around the background frame in V1.

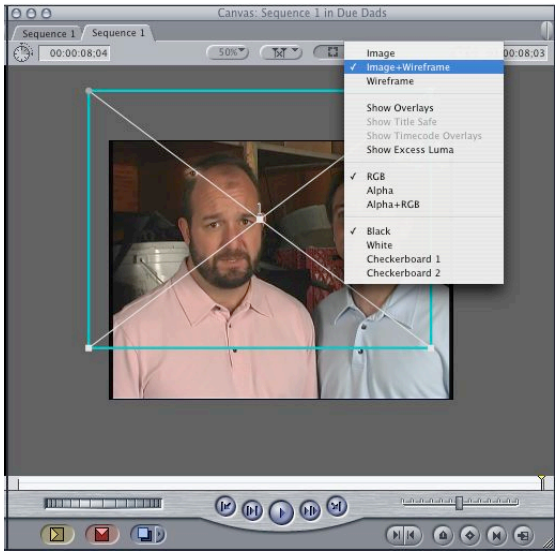
In order to move and therefore line up the image in the background so that the hairline in V1 lines up with V2, do the following:

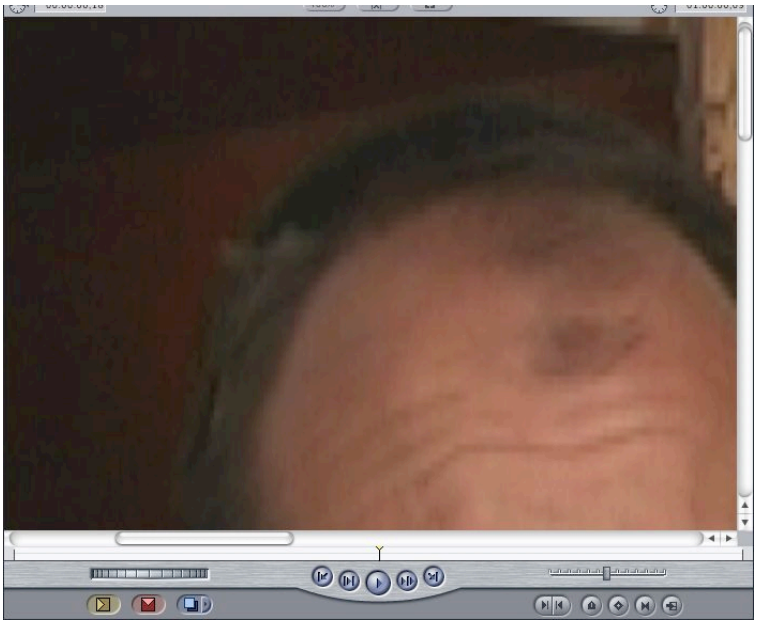
First, go to the **Timeline** and single click on the single frame you are working on. It will; now be highlighted.

Then go to the **Canvas** and pull down on box looking pull down menu at the top right and select **IMAGE AND WIREFRAME**.

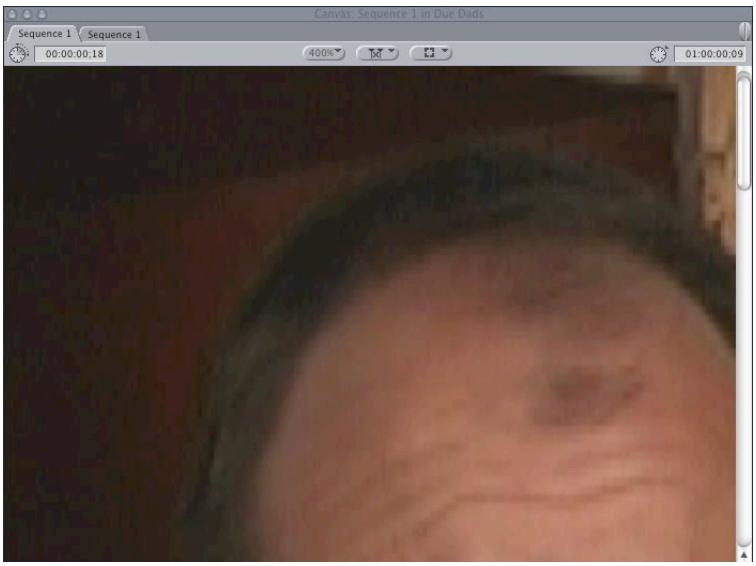
A blue box will now surround whatever clip is highlighted in the **Timeline**. If you have done this right it will be showing you a box around what is V1 even though you are only seeing V2 (except for the eye which is from V1).

You can grab this blue box and shift around the frame in V1 until the eye disappears and the correct hair shows through.






Canvas: Sequence 1 in Due Dads
Sequence 1
Sequence 1
00:00:00:18
400%
01:00:00:09


Canvas: Sequence 1 in Due Dads
Sequence 1
Sequence 1
00:00:00:18
400%
01:00:00:09

Now you have to repeat this for the next few frames.

A few more thoughts:

I have tried to use Photoshop to do this kind of work. I exported each frame and used the sophisticated tools that it offers to smudge or heal each bug into oblivion. But when I imported them back into the timeline it had a stroboscopic effect. The fixing I did in one frame looked great in a still, but the blending process that Photoshop uses does not account for the fact that not only does the blending need to happen spatially within this one frame, but it also has to match the blending that is done in the next frame. Don't waste your time using Photoshop to fix a problem like this.

Also, I could have used method two for the whole thing, but it is a little more time consuming. Method one can take care of multiple frames at once.

And if you want to use method one to take care of a lot of frames at once, but you cannot use method one because a rectangular shape will not work, then try an **Eight Point Garbage Matte.**

All of these methods also work well to get rid of the errant mic in the frame or pesky boom pole shadow.

And now a word from Shakespeare:

Thus hath the candle singed the moth.
O these deliberate fools! When they do choose,
They have the wisdom by their wit to lose.
Shakespeare, The Merchant of Venice

About the Author

Troy Lanier (pic) is the director and editor of Due Dads: The Mans Survival Guide to Pregnancy" (link) which is being released by Monterey Media (link) in July. He also teaches filmmaking to high school students in Austin, Texas. Clay Nichols and Troy Lanier co-authored "Filmmaking for Teens: Pulling off Your Shorts" by Michael Weise Productions (link). Troy Lanier and Brewer Stouffer's documentary "Streets Without Cars" (www.streetswithotucars) is distributed by the National Film Network.