

Toon Boom Studio V2 Quick Start Tutorial

The lessons in this tutorial give you the chance to learn **Toon Boom Studio™** using realistic examples.

You can do these lessons in any order. Each are self-contained so that you can learn about the features that interest you most.

The material for these lessons is included with the full installation of **Toon Boom Studio™** in the Tutorial folder.

This chapter includes the following lessons:

- Lesson 1: Drawing on page 56
- Lesson 2: Painting on page 65
- Lesson 3: Lip Syncing on page 76
- Lesson 4: Building a Multiplane Scene on page 86
- Lesson 5: Creating Cross-Dissolves with Color Transform Elements on page 96
- Lesson 6: Creating Clipping Mask Effects on page 107

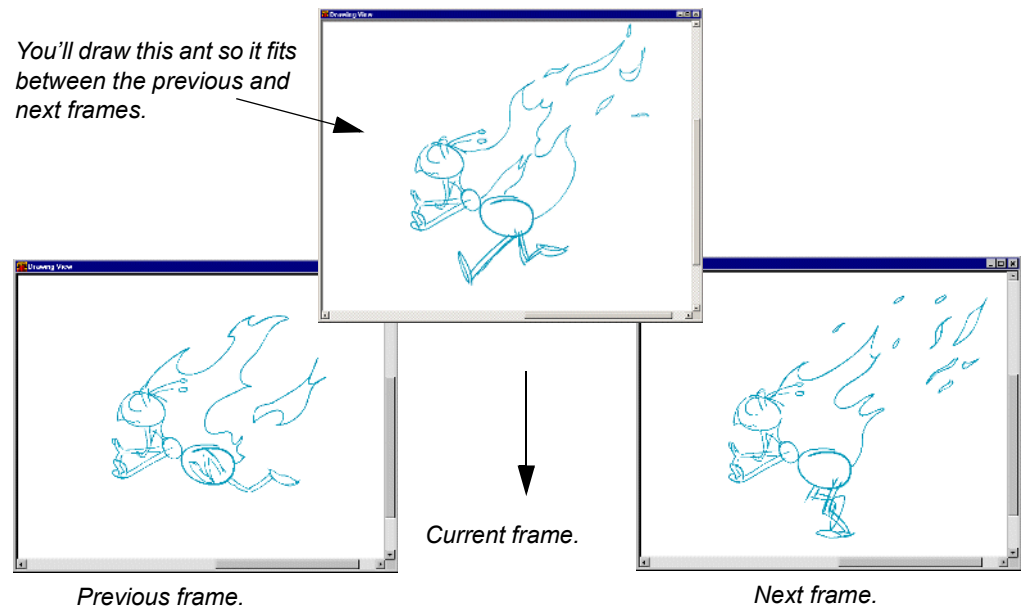
Lesson 1: Drawing

In this lesson, you'll work in Drawing Mode with the **Toon Boom Studio™** drawing tools to create frame-by-frame animation.

There are two animation sets for this lesson:

- Drawing_Rough
- Drawing_Final

You'll use the Drawing_Rough animation set to complete a walk-cycle. You'll use the onion skin, rotary light table, and the **Toon Boom Studio™** centerline drawing tools and pressure-sensitive Brush tool to draw Mike Ant.



To start the Drawing Mike Ant lesson, follow these steps:

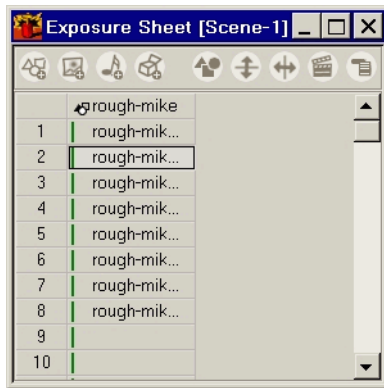
1. Open the **Drawing_Rough** animation set in the **Lesson1_Drawing** folder.
2. Save the animation in a location of your choice using **File > Save As**. Saving this animation set to a new location will ensure that you always have the original to return to and use should you want to.

Step 1: Draw Mike Ant's Body

In this step, you will draw the body of Mike Ant using the Ellipse tool. Because this drawing must fit with the other drawings in the element to create a complete cycle, you will use the onion skin to show previous and next drawings as a reference while you draw.

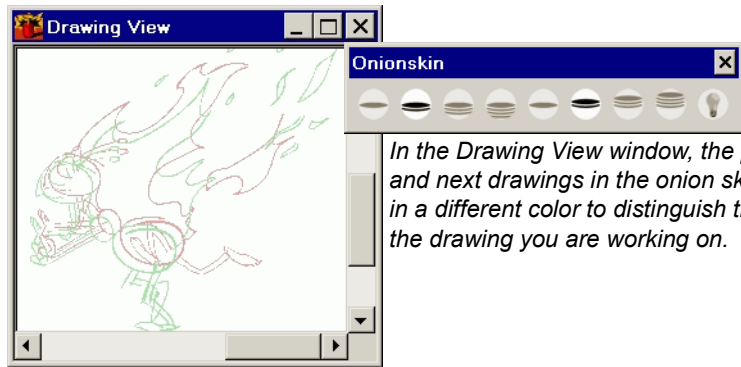
To draw Mike Ant's body, follow these steps:

1. In the **Exposure Sheet** window, click the first cell in the **rough-mike** element and press the down arrow key on your keyboard. As you cycle through all of the drawings in the rough-mike element, you'll notice that there is no drawing in the rough-mike-2 cell. That's because you are going to draw it!
2. Select the rough-mike-2 cell.




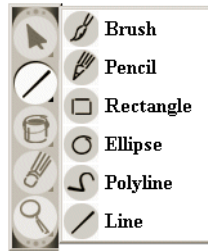
3. Set up the Drawing View window so that you have a clear view of Mike Ant.
 - To turn off the grid, press [G], the default keyboard shortcut.
 - To zoom-in, press [X], and to zoom-out press [Z].
 - To pan the Drawing View window, press and hold [Spacebar] and use the Grabber tool to change the part of the window you are seeing.

4. Click the **Previous Drawing**  button and the **Next Drawing**  button in the **Onion Skin** toolbar.



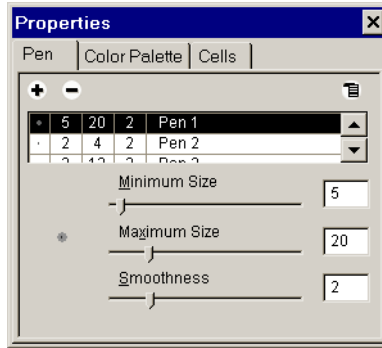
In the Drawing View window, the previous and next drawings in the onion skin appear in a different color to distinguish them from the drawing you are working on.

5. Select the **Ellipse**  tool from the **Tools Palette**.

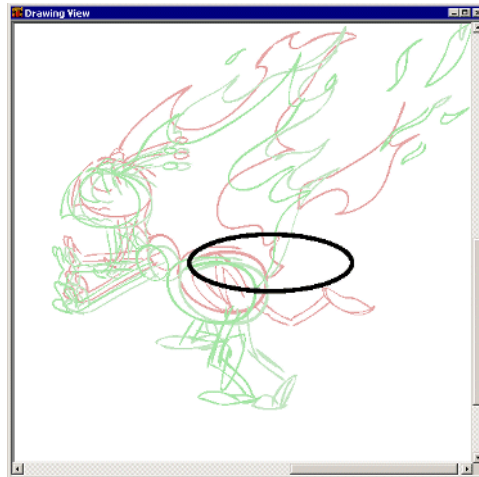


6. If the **Properties** window is not open, select **Window > Properties**. The **Properties** window appears.

7. In the **Pen** tab, type 20 for the Maximum Size value. When you draw with the centerline tools (including the Pencil, Rectangle, Ellipse, Polyline and Line) **Toon Boom Studio™** uses the Maximum Size value for the width of the line.



8. In the **Drawing View** window, draw an ellipse roughly the shape of Mike Ant's body. Don't worry about the actual shape not being the same as the one in the animation. You will reshape it using the **Contour Edit** tool.



9. Save your animation using the **Save** command.

Step 2: Reshape Mike Ant's Body

In this step, you will use the Contour Editor tool to move the points that make up the ellipse you drew in step 1 and reshape Mike Ant's body.

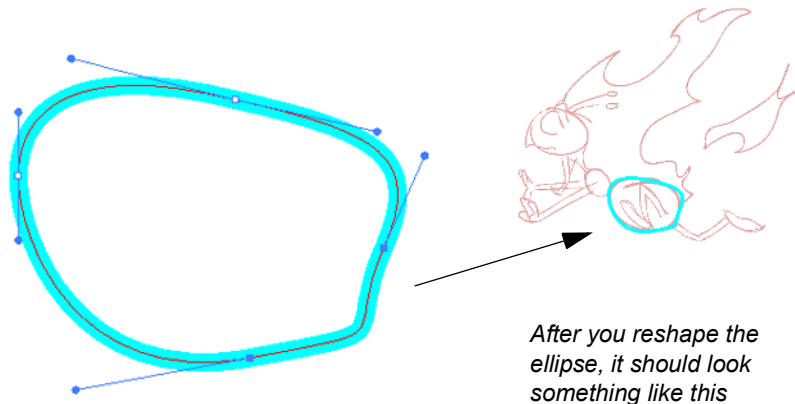
To reshape Mike Ant's body, follow these steps:

1. From the **Tools Palette**, select the **Contour Editor**.



2. Click the ellipse you drew in step 1. You'll notice that a line appears down the center of the shape (a centerline) and that there are points on this line.
3. Use the **Contour Editor** to reshape the ellipse by moving the points and dragging the Bezier handles. (To get the Bezier handles to appear, click a point on the centerline.)


The final shape should be approximately the same shape as the ant's body shown in the previous drawing.



After you reshape the ellipse, it should look something like this

4. Save your work using the save command. Select **File > Save**.

Step 3: Draw Mike Ant with the Brush Tool

In this step, you use the Brush  tool to draw the head and then the rest of Mike Ant.

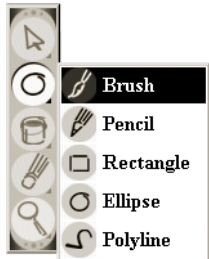
Unlike the Ellipse tool and other centerline tools (Rectangle, Polyline, Line and Pencil), the Brush tool creates variable-width strokes that respond to the pressure you apply with a digital pen and graphic tablet.

When you draw with the Brush tool, **Toon Boom Studio™** creates shapes that are formed by points that surround a zone, which is filled with color. We call the shapes created by the Brush tool “contour shapes”.

Drawing with the Brush tool allows you to create distinctive lines that are more natural than the mechanical looking centerline shapes. However, brush strokes require more memory to store because they use more points to create. If you are concerned about the file size of your animation, consider carefully when choosing your drawing tools.

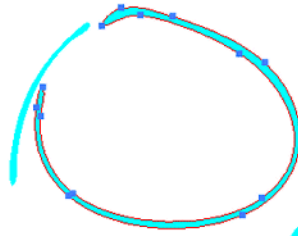
To draw Mike Ant with the Brush tool, follow these steps:

1. Select the **Brush** tool from the **Tools Palette**.

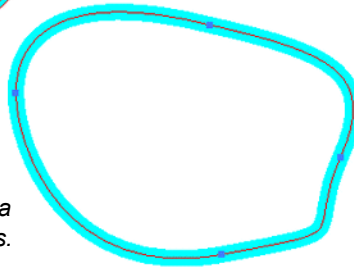


2. In the **Pen** tab, type 5 for the Minimum Size value. When you draw with a graphic tablet and pen, **Toon Boom Studio™** uses the Minimum Size and Maximum Size values to determine the width of the variable-width line.
3. In the Drawing View window, use the **Brush** tool draw a circle approximately the same shape as the Mike Ant's head as shown in the previous drawing in the onion skin.
4. Using the **Contour Editor** tool, [Shift]+click the ant's head drawing and the ant's body. Notice the number of points in Mike Ant's head, drawn using the Brush tool, and Mike Ant's body, drawn using the Ellipse tool.

When you have finished comparing the drawings deselect them by clicking anywhere in the Drawing View window.

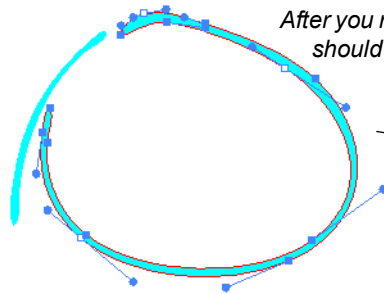


A brush stroke is surrounded by a collection of points. The outline of the brush stroke or painted fill is called a Contour.



A line drawn with the Ellipse tool is defined by a series of centerline points.

5. Using the **Contour Editor** tool and the curve handles, reshape the ant's head you drew so that it is approximately the same shape as the ant's head shown in the previous drawing in the onion skin.

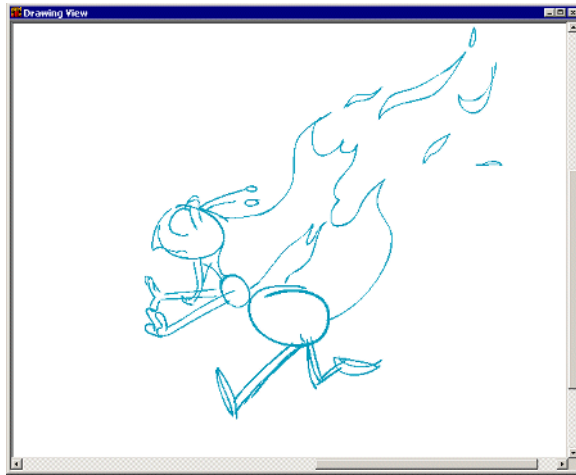


After you reshape the head drawing it should look something like this.



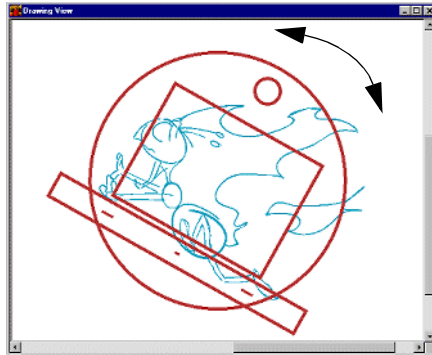
6. Draw the rest of the ant. The completed drawing must fit in run cycle, so you must draw Mike's legs so that his left leg is touching the ground and his right leg is bent at the knee. His body should also be slightly elevated, so you might want to move the body up slightly.

When you finish drawing, your ant should look something like this.



You can look at the final drawing in the Drawing_Final animation set to see how we did it.

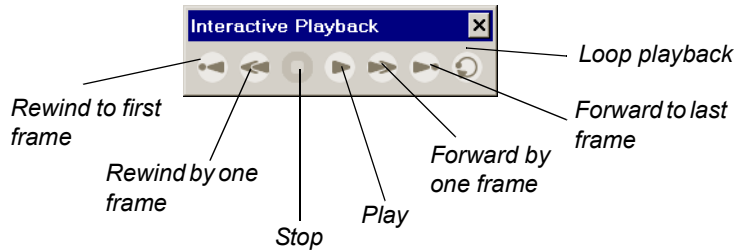
7. To help you with your drawing, you can use the **Rotary Light Table** so that you can get a better angle on the part of the drawing you are working on.
 - To display the **Rotary Light Table**, press [Ctrl]+[Alt] and use your mouse to freely rotate your drawing space.



- To return your drawing space to the original angle, select **View > Reset Rotation** or press [Shift] + [C].

Step 4: Preview the Mike Ant Cycle

In this step, you use the Interactive Playback and the buttons on the Interactive Playback toolbar to preview your drawing of Mike Ant and see how it fits into the run cycle.



To preview the Mike Ant cycle using Interactive Playback, follow these steps:

1. In the **Exposure Sheet** window, press [Shift] and select drawings 1 through 8.
2. Press **Play** ► in the **Interactive Playback** toolbar.

All of the selected content plays in sequential order in the **View** window until the frame marker reaches the last frame of the scene or until you click the **Stop** ■ button.

3. If you want the playback to repeat, select the **Loop** ↺ button in the **Interactive Playback** toolbar before you click the **Play** ► button.
4. Make corrections to your Mike Ant drawing so that the transition between the drawings in the cycle is logical and smooth.
5. Save your animation set and you are done!

Congratulations on passing the first lesson in the Quick Start Tutorial.

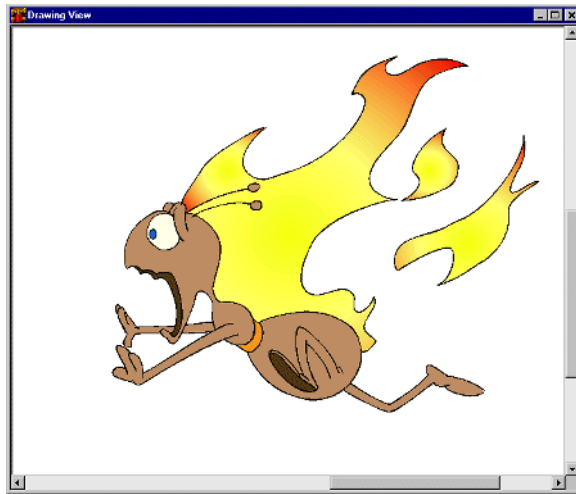
Lesson 2: Painting

In this lesson, you will paint the infamous Mike Ant, and give him some color!

There are two animation sets for this lesson:

- Painting_Rough
- Painting_Final

In the Painting_Rough animation set, you'll build a color palette for Mike Ant and create a gradient color swatch. Then you'll paint Mike Ant using **Toon Boom Studio™** power-paint features that will speed the painting process.



To start the Painting Mike Ant lesson, follow these steps:

1. Open the **Painting_Rough** animation set in the **Lesson2_Painting** folder.
2. Save the animation in a location of your choice using **File > Save As**.
3. Click the **Play** ► button in the Interactive Playback toolbar, and watch Mike Ant run!

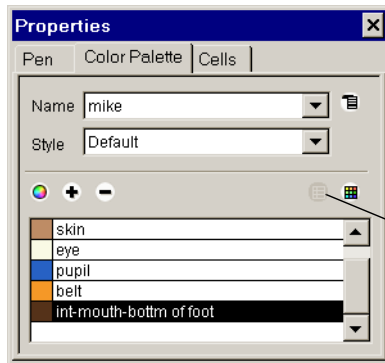
You're going to give Mike some color, as well as give him a real reason to run - red hot flames licking his back!

Step 1: Add a Color Swatch

In this step, you'll add a color swatch to Mike Ant's color palette.

To add a color swatch, follow these steps:

1. If the **Properties** window is not open, select **Window > Properties**. The **Properties** window appears.
2. Click the **Color Palette** tab. The **Color Palette** tab appears with the default set of colors.
3. From the **Name** drop-list, select **mike**. This is the Mike Ant color palette, which you can use to organize all of the color swatches for this buggy character.
4. Click the **Show Color Name** button on the right side of the dialog box, just above the swatch scroll bar. This changes the display to a list of swatches and their names.



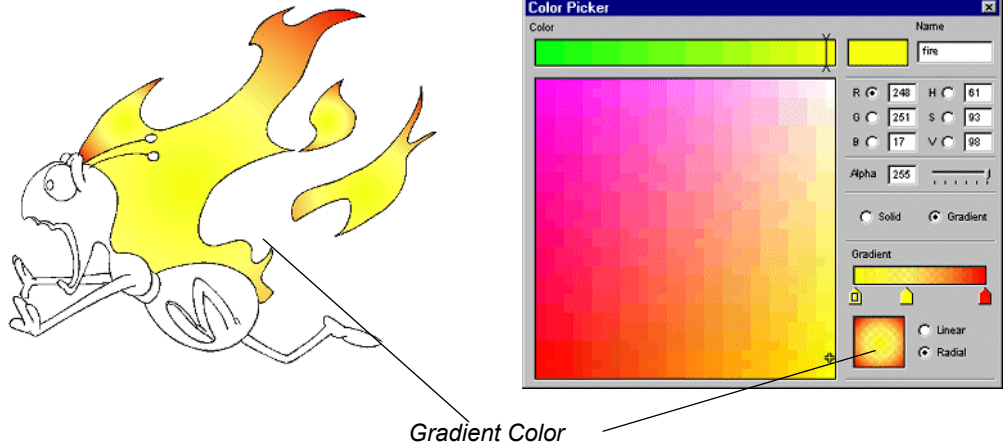
This color palette gives you all the color swatches you need to paint your ant

Show Color Names button, displays the swatch names.

5. Select the **belt** color swatch and click the **Add a Color +** button. A copy of the belt swatch appears in the palette style and it is called **New 1** by default. You will edit the properties of this color swatch in the next step.

Step 2: Create a Gradient “Flame” Swatch

In this step, you will create a gradient for the flame that is licking Mike Ant’s back. You’ll use the swatch you created in the previous step as the basis for the gradient.



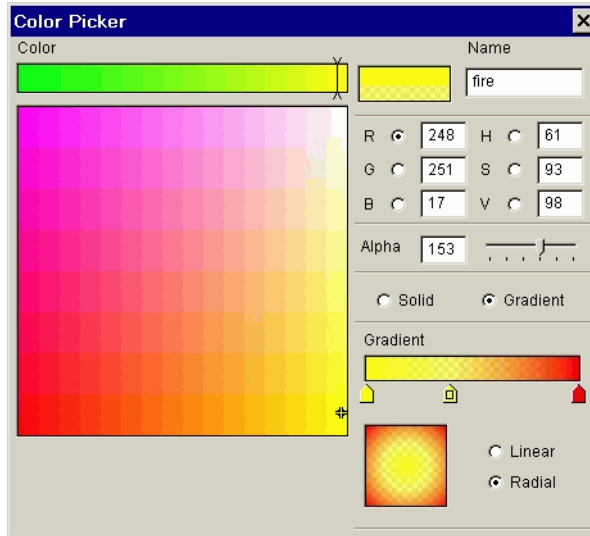
To create a gradient, follow these steps:

1. Double-click the color swatch you added in the last step. You’ll use this swatch as a basis for the gradient because the orange color in the swatch is similar to one of the gradient colors.

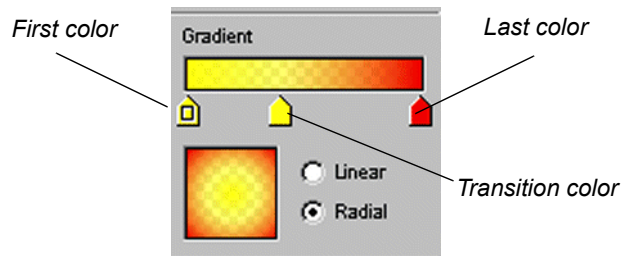
The **Color Picker** opens.

2. Select **Gradient** by clicking the button to the left of the **Gradient** label.
3. In the **Gradient** panel, select **Radial**. The colors in a radial gradient blend in a circular pattern.
4. Click the first marker. A square appears in the marker to indicate that it is editable.

5. Change the color of the first marker to yellow by dragging your mouse in the color square to the left of the gradient panel. We used these colors, which you can type in the R, G, B fields: 248, 251, 17



6. Click below the **Gradient** bar to add a gradient marker. The color of the marker is the same as the marker you had selected. Gradient markers represent the start or end of a transition between different colors.
7. In the **Alpha** value field, type 153. An alpha value of 255 is completely opaque and an alpha value of 0 is completely transparent. At 153, this value is partly transparent.
8. Change the value of the last color to red. You can use these specific values: 236, 0, 0



9. Close the Color Picker and that's it! You have created a gradient swatch!

Step 3: Paint the Flame on Mike Ant's Back

Now that you have created a gradient for the flame, you are ready to paint.

To paint the flame on Mike Ant's back, follow these steps:


1. In the **Exposure Sheet** window, select the first drawing in the **colorMe** element. Mike Ant appears in the Drawing View window.

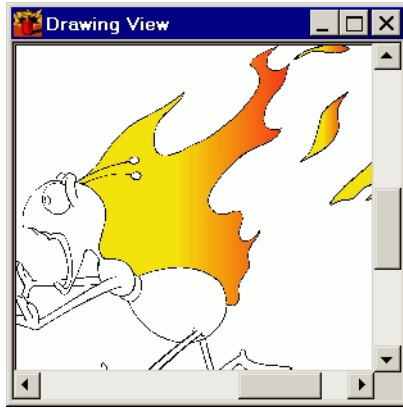


2. Set up the Drawing View window so that you have a clear view of Mike Ant.
 - To turn off the grid, press [G], the default keyboard shortcut.
 - To zoom-in, press [X], and to zoom-out press [Z].
 - To pan the Drawing View window, press and hold [Spacebar] and use the Grabber tool to change the part of the window you are seeing.

3. Select the **Paint**  tool from the **Tools Palette**.



4. From the Color Palette tab, select the gradient swatch you created for the flame.
5. Click the areas of the flame with the **Paint**  tool.



6. Scroll through the Mike Ant drawings in the Exposure Sheet window and paint all of the flaming areas. If you select the Exposure Sheet window, press [S] to advance to the next frame and press [A] to return to the previous frame.

You'll notice that after you paint drawing 8, you will come to drawings that have already been painted. That's because we repeated drawings 1 through 8 in the element to create a cycle. Because each cell in the Exposure Sheet window refers to a drawing in the animation set folder, when you update a drawing that is repeated in other frames, **Toon Boom Studio™** updates all frames that reference that drawing.

Step 4: Edit the Direction of the Flame

So you've painted all the flames that are scorching Mike Ant on his run cycle. But do they look convincing? Do they look natural? Not really, if you ask me. Usually a flame will change color at the edges, not just in a straight line from the source.

In this step, you will use the **Edit Texture**  tool to change the position and length of the flame gradient.

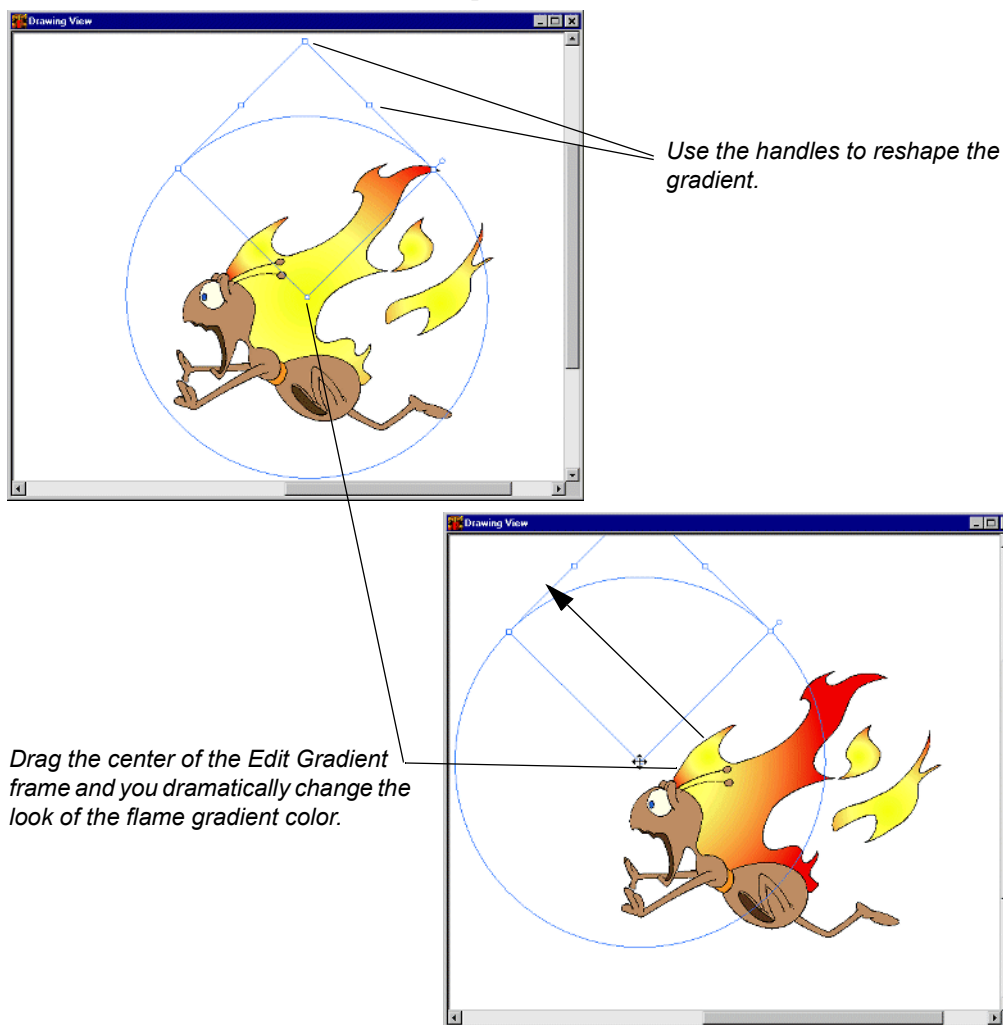
To edit the color gradient swatch, follow these steps:

1. Select the **Edit Texture** tool from the **Tools Palette**.



2. With the **Edit Texture** tool, click the flame gradient in one of the Mike Ant drawings. The **Edit Gradient** frame appears.

3. Grab the handles to rotate the gradient or change its length. You want to create an effect that looks more natural, so experiment with the **Edit Texture** tool.



For ideas about how to create a flame effect that changes as Mike runs, check out the [Painting_Final](#) animation set to see how the gradient looks in each frame.

Step 5: Paint Mike Ant

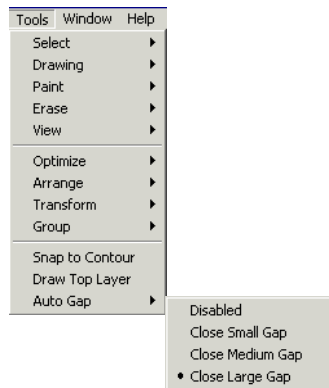
In this step, you are going to get to try out the powerful auto paint features.

With auto paint, you click a zone in one drawing and **Toon Boom Studio™** automatically scrolls through the rest of the drawings in the elements to check if there is a closed zone beneath where you clicked. If there is a closed zone, **Toon Boom Studio™** paints the zone with the same color.

Another feature you need to be aware of is auto gap closing. To fill a zone with color, it has to be completely closed. Sometimes, when you draw with the Brush tool, you may not always close zones completely. When you are painting, you can set a threshold for line gaps so that **Toon Boom Studio™** will paint zones regardless of the size of the gap that keeps them open.

To paint Mike Ant, follow these steps:

1. From the **Tools > Auto Gap** menu, select **Close Large Gap**.



2. In the **Exposure Sheet** window, select the **colorMe-1** drawing.
3. Press [X] to zoom-in on the drawing so that you can see the zones clearly.
4. Select the **Paint** tool from the **Tools Palette**.
5. In the **Color Palette** tab, click the **skin** color swatch in the **mike** color palette.
6. Press [Shift]+[Alt] and click Mike Ant's body. Your pointer changes to indicate that the **Paint All** tool is active. It may take a couple of minutes for **Toon Boom Studio™** to paint all of the zones.

After it is done, scroll through the drawings to see that the body on all of the drawings are painted with the skin color swatch. You may have to manually correct some drawings because of where you clicked on the drawing (it might overlap other zones, for example).



*Click here with the **Paint All** tool and it paints the same spot in all of the drawings in the element.*

7. Continue to use the **Paint All** tool until all the static areas of your drawing are colored.
8. When you are finished painting the big zones, you are going to have to paint the smaller zones one at a time. Use the names of the color swatches to identify what zone they belong to on Mike Ant and just click those zones with the **Paint** tool.



Step 7: Export

That's it! You've made Mike Ant colorful and given him real inspiration to run, a hot fire! Now you are ready to export your creation and share it with your friends and family.

To export your animation, follow these steps:

1. Zoom-in and pan the **Drawing View** window so that Mike Ant fills the window. (When you export a **Drawing Mode** scene, **Toon Boom Studio™** uses the zoom level and position of the **Drawing View** window.
2. Select **File > Export > Macromedia Flash Movie**. The **Save As** dialog box opens.
3. Type the name of the movie in the **File Name** field, select a location, and click **Save**.

The **Export as Macromedia Flash Movie** dialog box opens.

4. Select **Drawing Mode Current Scene** from the **Export type** panel and leave the rest of the settings as default.
5. Click **OK** to begin the exporting process. A progress bar appears to show you the progress of the export. If you want to cancel the export, click **Cancel**.

Your Macromedia® Flash™ movie opens automatically in a Flash player when the export has finished.

Lesson 3: Lip Syncing

Lip syncing can be the most tedious task in the animation process. Before you can even begin drawing the lip positions, you have to analyze the voice track to determine what lip position best matches the sound at each frame.

Toon Boom Studio™ features a lip sync tool that assess the sounds in a voice track and generates a lip chart based on the eight animation phonemes. In addition to that, in V2 we added a tool that will automatically map drawings in an element based on the sounds they are meant to reflect. These two tools together will save you tons of time so that you can focus on more interesting and creative tasks.



Just look at Deb Ant! So nervous?

Looks like she's got something to say?

There are two animation sets for this lesson:

- Lip_Sync_Rough
- Lip_Sync_Final

To start the Painting Mike Ant lesson, follow these steps:


1. Open the **Lip_Sync_Rough** animation set in the **Lesson3_LipSync** folder.
2. Save the animation in a location of your choice using **File > Save As**.

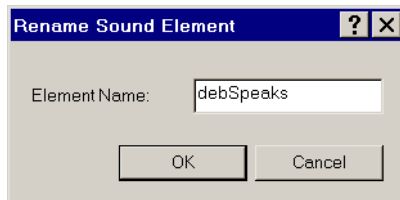
Step 1: Import Deb Ant's Voice Track

In this step, you will import a speech made by Deb while she's at the Survivor Ant tribal counsel meeting.

In **Toon Boom Studio™**, you must import sounds into Sound elements so you must add a sound element first.

To import Deb Ant's voice track, follow these steps:

1. Click the **Add Sound Element**  button at the top of the **Exposure Sheet** window. An empty sound element appears in the exposure sheet.
2. Select **Element > Rename Element** and use the **Rename Sound Element** dialog box to name the element *debSpeaks*.



3. Right-click the first cell in the element and select **Import Sound > From file** from the pop-up menu. The **Open** dialog box opens.
4. Browse the **Lip_Sync_Rough** animation set folder and select **please_dont.MP3** and click **Open**. The sound file now appears in the cell you selected.

If you saved your animation set folder in a new location like we told you to with the **Save As** command, you are going have to locate the original folder to get the sound file.

5. Turn-up your headphones or speakers, right-click the first cell in the debSpeaks element and select **Play** from the pop-up menu. Listen as Deb Ant begs not to be kicked out of the tribe.

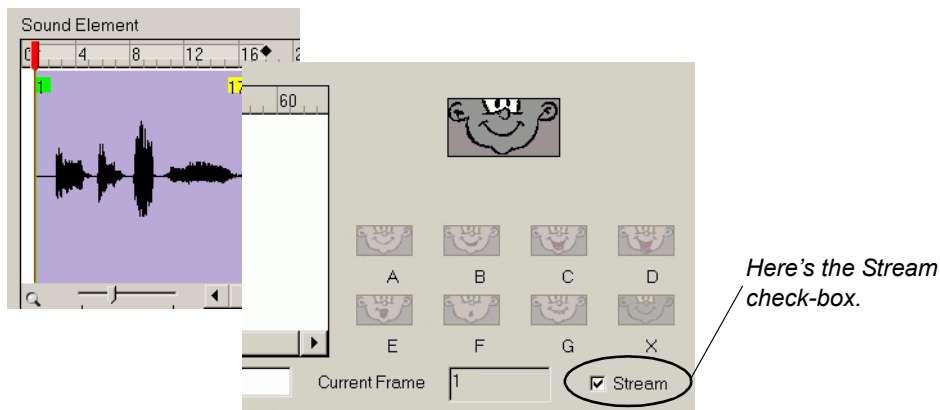
Step 2: Generate a Lip Chart for Deb Ant

In this step, you will use **Toon Boom Studio™** to generate a lip chart that matches Deb Ant's speech to a set of animation phonemes. You can use the lip chart as a reference as you draw the lip sync images for your characters.

To generate a lip chart for a Deb Ant's voice track, follow these steps:

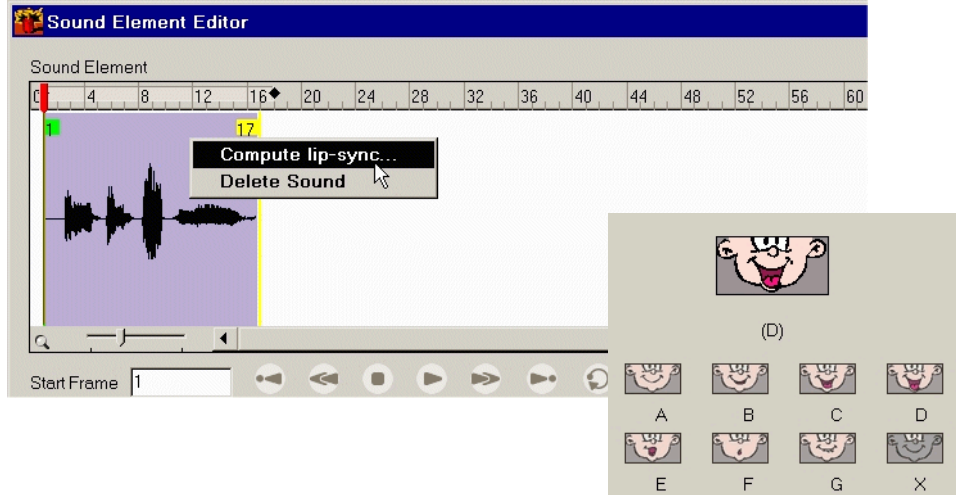
1. Select the **debSpeaks** element and select **Element > Edit Sound**. The **Sound Element Editor** appears.
2. In the **Sound Element** panel, click the wave form of the sound track and click the **Stream** button to set up this sound for streaming.

Voice tracks are best set as streamed sounds because they will maintain synchronization with images in Macromedia® Flash™ movies better. However, there can be only one streamed sound playing at a time, so you must pick the sound files that you want to stream, or **Toon Boom Studio™** will do it for you.

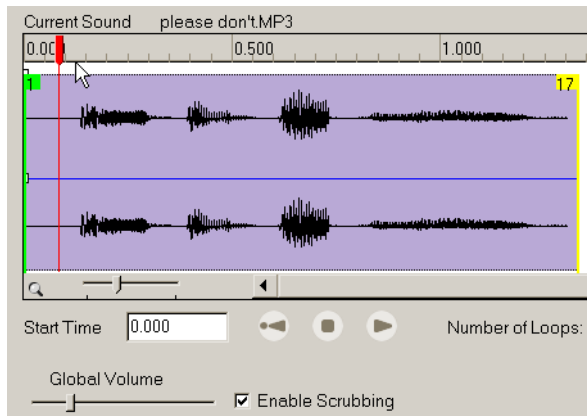


3. Right-click the waveform in the **Sound Element** panel and select **Compute Lip Sync**. A progress bar appears as **Toon Boom Studio™** analyzes the selected sound clips and assigns a lip sync letter to each frame.

The lip sync images on the right side of the window become active. Drag the frame slider in the Sound Element panel to see the lip position for each frame of sound.



4. Select the **Enable Scrubbing** option at the bottom of the **Sound Element Editor**.
5. Drag the frame slider at the top of the **Current Sound** panel to “scrub” the sound track and hear for yourself the sound the Deb is making at each frame. The speed of the scrubbing is relative to the distance you drag with the mouse. The further you drag the mouse, the faster the sound “scrubs”.



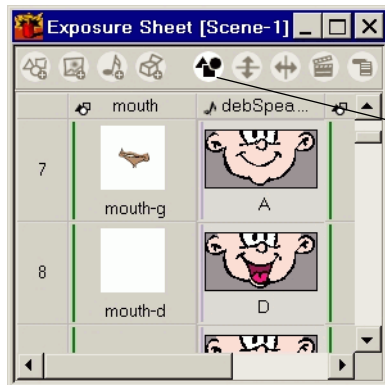
6. Click **OK** to close the **Sound Element Editor** and then save your animation set.

Step 3: Draw Deb Ant's Missing Lips

In the sample Lip Sync lesson, we drew six out of seven of the lip positions for Deb Ant. It is up to you to draw Deb's lip for the "D" position using the lip sync preview images.

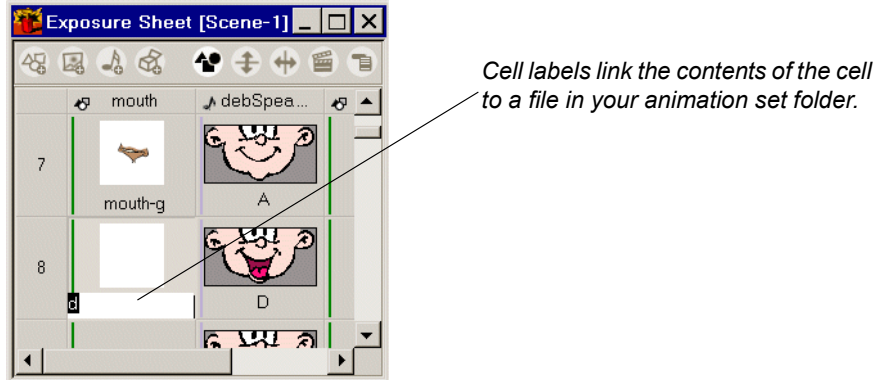
To draw Deb Ant's missing lips, follow these steps:

1. In the **Exposure Sheet** window, drag the **debSpeaks** element so that it is next to the mouth column. This will make it easier for you to see the lip chart while you are working on Deb's lips.
2. Right-click the **debSpeaks** element and select **Show lip-sync** from the pop-up menu. **Toon Boom Studio™** displays the phoneme assigned to each frame in the sound.
3. Click the **Toggle Thumbnails** button to show the lip chart.



*This is the Toggle Thumbnails button.
Click it and you will see preview images
for the lip chart you computed.*

4. Scroll down the Exposure Sheet window. At the frame in the debSpeaks element that is labelled D, you must double-click the equivalent cell in the mouth element and rename the cell D.



5. Now, with the lip sync preview image as a reference, draw Deb Ant's lips in the D position. After you have finished drawing her lips, paint them using the swatches in the Deb Ant color palette on the Color Palette tab.

This is how Deb Ant's lips look in the D position we drew.



Here are some tips that will help you out:

- Use the Add Stroke tool to create a closed zone without visible line art.
- Use the Close Gap tool to close the zone in the neck so that you can paint it.
- You can copy and paste drawings from previous cells (try the F cell) and modify them to suit the lip position.
- The lips must fit on Deb Ant's head.

- ⇒ You can use the onion skin to display the previous and next drawings and use those drawings as a reference.
- ⇒ You can use the Auto Light Table to display other drawings in the frame, including Deb. You will need to hide other elements (using the Element List) to display only selected elements.
- ⇒ You can add a drawing (like the F drawing) to the Static Light Table so that you can use it as a reference.
- Set up the Drawing View window so that you have a clear view of Deb Ant.
 - ⇒ To turn off the grid, press [G], the default keyboard shortcut.
 - ⇒ To zoom-in, press [X], and to zoom-out press [Z].
 - ⇒ To pan the Drawing View window, press and hold [Spacebar] and use the Grabber tool to change the part of the window you are seeing.

Step 4: Auto-Map Deb Ant's Lips to Her Voice Track

In **V2**, we have added another super time-saving feature to speed the lip sync process.

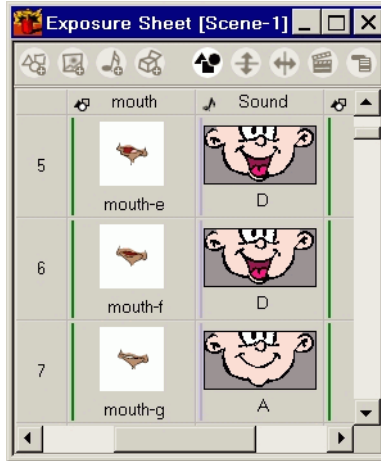
In **Lip Sync Mapping** dialog box, you identify each phoneme drawing for a character and then **Toon Boom Studio™** automatically labels all of the cells in the character's element with the appropriate label for each phoneme drawing.

To make this feature really work for you, it is best if you name your drawings with the seven phonemes and the closed mouth position: A, B, C, D, E, F, G, and X.

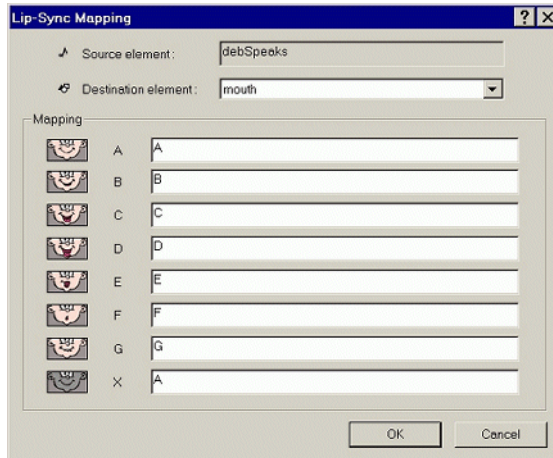
In the mouth element, we have already named all the elements with the letters of the seven plus one phonemes. All you have to do is map the drawings to the phonemes in this element, and **Toon Boom Studio™** will do the rest of the work for you.

To auto-map Deb Ant's, follow these steps:

1. Select the first drawing in the mouth element and press the arrow keys and scroll down the drawings in this element. You'll see that the mouth positions do not reflect the lip chart that you generated.

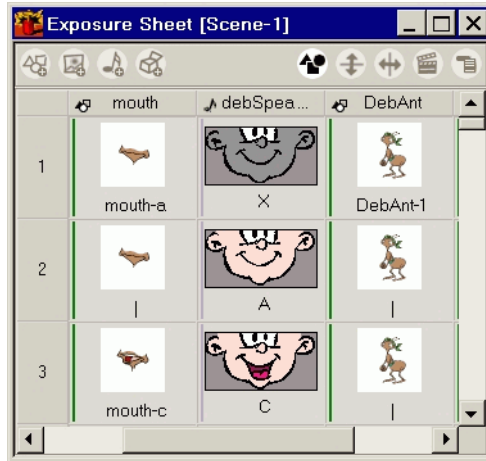


2. Right-click the title of the debSpeaks element and select **Modify Lip Sync Mapping** from the pop-up menu. The **Lip Sync Mapping** dialog box opens.



3. From the **Destination element** pull-down list, select **mouth**. This is the element that you are going to apply the auto-map to.

4. In the **X** field, type A. For Deb's lips, you are going to use the same drawing for the A position and the X position.
5. Click **OK**. The dialog box closes. If you scroll through the mouth element now, you'll see that all of the lip drawings have been mapped to the phonemes in the Deb's voice track.



Step 5: Export

Time to export your lip sync scene.

To export your animation, follow these steps:

1. Zoom-in and pan the **Drawing View** window so that Deb Ant fills the window. (When you export a **Drawing Mode** scene, **Toon Boom Studio™** uses the zoom level of the **Drawing View** window.
2. Select **File > Export > Macromedia Flash Movie**. The **Save As** dialog box opens.
3. Type the name of your lip sync movie in the **File Name** field, select a location, and click **Save**.

The **Export as Macromedia Flash Movie** dialog box opens.

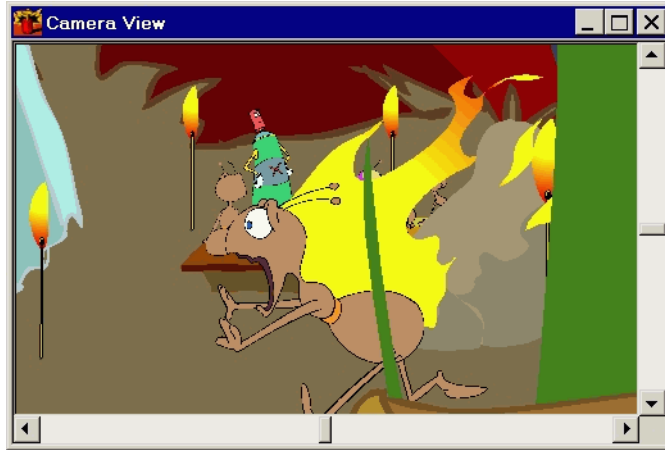
4. Select **Drawing Mode Current Scene** from the **Export Type** panel and leave the rest of the settings as default.
5. Click **OK** to begin the exporting process. A progress bar appears to show you the progress of the export.

Your Macromedia® Flash™ movie opens automatically in a Flash player when the export has finished.

Lesson 4: Building a Multiplane Scene

One of the great powers of **Toon Boom Studio™** is the 3D scene space and the camera, which allows you to design multiplane moves and cinematic camera effects.

In this lesson, you'll create a multiplane camera move that trucks-in on the action, as well as make that hot ant run across the stage. In the process of all this, you will also get to work a bit with templates.



There are two animation sets for this lesson:

- Sceneplanning_Rough
- Sceneplanning_Final

To start the Building a Multiplane Scene lesson, follow these steps:

1. Open the **Sceneplanning_Rough** animation set in the **Lesson4_Sceneplanning** folder.
2. Save the animation in a location of your choice using **File > Save As**.
3. Select **View > Sceneplanning Mode** to switch to **Sceneplanning Mode**.
4. Playback the rough animation by selecting the **Play** command from the **Play > Interactive Playback** menu. Not really much to see, eh? Nothing moves, nothing happens. Go to step one to create some more interesting visual effects in this scene.

Step 1: Attach the Camera to the Peg

The first step in this lesson is to create a camera move using a peg.

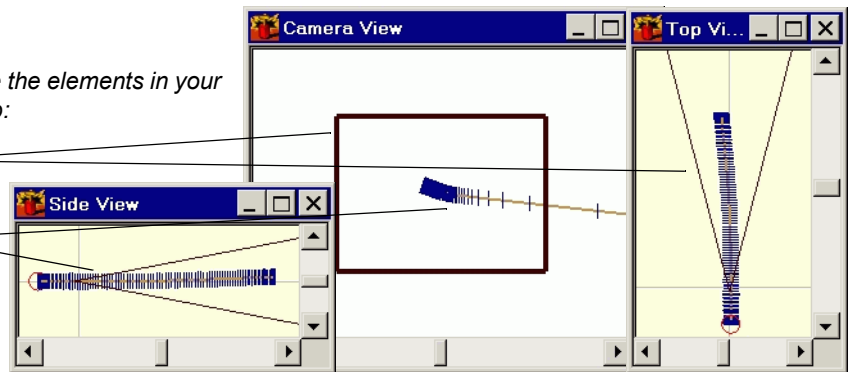
The idea of **Toon Boom Studio™**'s digital peg system was inspired by traditional 2D cel animation. In traditional animation, cycles of animation are typically drawn in-place. To make characters move through the cycle, animators would use peg bars, which would ensure that the drawings changed position gradually and precisely.

In **Toon Boom Studio™**, you use pegs to create all sorts of changes over time. In addition to motion, you can also create scaling and rotation effects using pegs.

Toon Boom Studio™ also features "cameras", which are like traditional cameras that "film" the action in a scene. In **Toon Boom Studio™**, you can combine these two features - cameras and pegs - to create camera moves like trucks and pans.

In the View windows, you can see the elements in your scene from the front, side and top:

- Here's the camera
- Here's a motion path we created with a peg



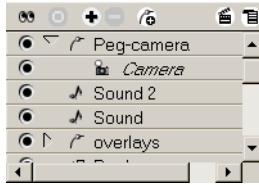
For this step, we've already created the motion path that the camera will follow. All you have to do is attach the camera to the peg.

To attach the camera to the peg, follow these steps:

1. In the **Timeline** window, drag the Camera element on top of the Peg-camera element.



The Camera element appears indented below the Peg-camera element to indicate that it is attached.



2. Select the **Play** command from the **Play > Interactive Playback** menu to playback the scene. Watch the camera as it follows the motion path of the peg.

Step 2: Add Mike Ant Template to the Scene

Templates are re-usable pieces of animation that you can share with different scenes in the same animation set or with many animation projects. Templates can help you reduce your workload through re-use, keep the file size of your animations small, as well as facilitate working in a group on the same project.

For example, you can create a template of a walk cycle and send the template file (with the extension .TBT) to your buddy so that she can incorporate into her animation.

You can create templates out of anything you create or import into **Toon Boom Studio™** - vector drawings, bitmaps, entire elements, groups of elements, sound or SWF files. With a template, you have a neat package of all the objects, which makes it easy to transport and manage. If you create templates from multiple elements, **Toon Boom Studio™** even maintains timing (exposure) and layout information with the templates.

So why all this talk about templates? We created a template of the walk-cycle of the painted ant, Mike. All you have to do is to drag it into the **Timeline** window and you will have added it to your scene.

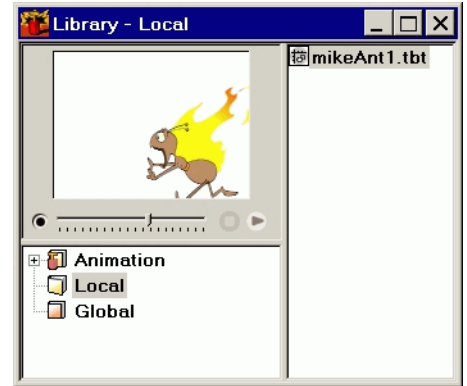
To add the Mike Ant template to the scene, follow these steps:

1. Make sure you are in **Sceneplanning Mode**.

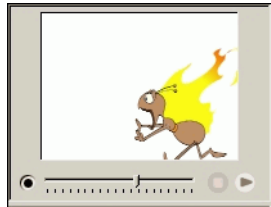
2. Select **Window > Library** to open the **Library** window. The **Library** window is your center for **Toon Boom Studio™** content management.

From the **Library** window, you can use:

- The **Animation** folder to access all of the vector drawings in your animation.
- The **Local** folder to manage all of the templates in your current animation set. Local templates are available to the current animation set only.
- The **Global** folder to manage all of the templates on your system. Global templates are available to all animation sets on your system.

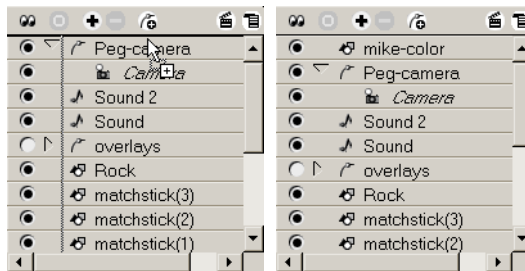


3. Open the **Local** folder, double-click the **mikeAnt.tbt** file and press the **Play** button in the preview panel. Watch as the Mike Ant runs in-place, flames scorching his back (poor Mike!).



This is the preview panel of the **Library**.

4. Drag the Mike Ant template file, **mikeAnt.tbt**, from the **Library** window to the **Timeline** window. Drop it just above the first element at the top of the list.



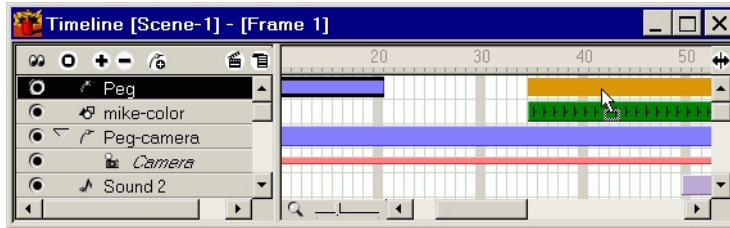
5. Save your animation set and move on to the next step, where you will make Mike Ant move as he runs.

Step 3: Add a Peg and Attach Mike Ant to It

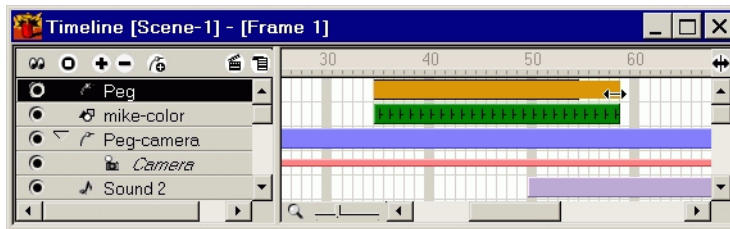
This is the first step to creating a motion path for Mike Ant.

To add a peg and attach Mike Ant to it, follow these steps:

1. Click the **Add Peg** button at the top of the **Timeline** window to add a Peg element to your animation.
2. Drag the trackbar of the peg so that it starts on frame 35.



3. Drag the right edge of the trackbar so that it lasts for 24 frames.



4. With the Peg selected, select **Element > Rename** and change the name of the peg to *Peg-mikeant*.
5. Drag and drop the **mike-color** element on top of the **Peg-mikeant** element. The Peg-mikeant element turns orange when your pointer is positioned so that you can attach the two elements.




Step 4: Create Motion Path for Mike Ant

This is the biggest step in this lesson. In this step you will get to do something a bit more challenging - you're going to make a motion path with the peg you just added. This motion path will move Mike Ant from the east to the west side of the stage as he moves from back to front.

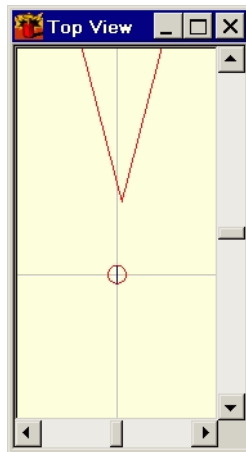
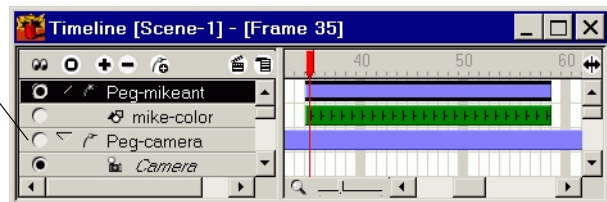
You will use the three View windows to design and playback your motion effect.

To create a motion path, follow these steps:

1. Advance the red frame slider at the top of the **Timeline** window to frame 35, where the Mike Ant peg will start.
2. In the **Timeline** window, select the Peg element you just added and click twice on the **Show/Hide All**  button at the top of the window so that only the Peg-mikeant element is showing. Then click the **Show** buttons next to the Peg-mikeant and Camera elements so that only they are displayed. The **Show/Hide All** command helps you quickly isolate the elements you want to work on.

At this point, your peg is just a red circle at the center of the **Top View** and **Side View** windows.

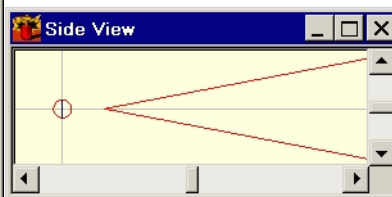
Use the Show/Hide buttons to display the elements



Your Top and Side View windows will look something like these.

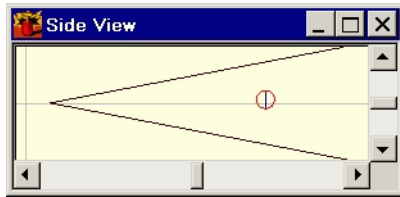
You may have to zoom and pan your windows to get the same views of these windows.

- To pan a window, press [Spacebar] and use the Grabber tool to move your view of the window.

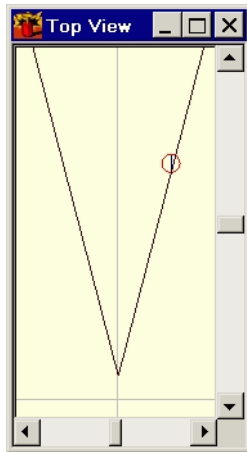


- To zoom-in, press [X].
- To zoom-out, press [Z].
- To reset the view, press [Shift]+[V].

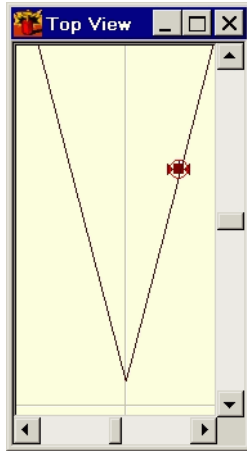
3. With the **Select** tool, move the red circle of the peg in the **Top View** and **Side View** windows.
 - In the **Side View** window, move the peg so that it is just above the line that marks the division between north/south and place it further back in the scene.



- In the **Top View** window, place the peg against the east side of the camera angle.



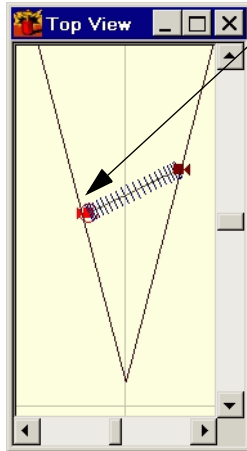
4. Make sure you have the Peg element selected in the **Timeline** window and select **Tools > Motion** to activate the **Motion** tool.



When you activate the Motion tool, two key frames appear on the peg.

- *The first key frame is on the left.*
- *The last key frame is on the right.*

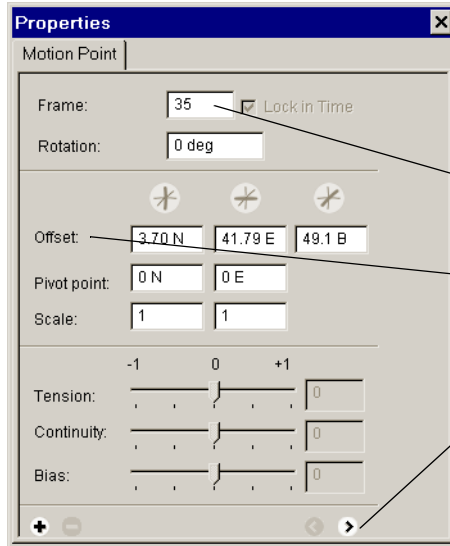
5. With the **Motion** tool in the **Top View** window, drag the last key frame on the motion (which is on the left) path towards the west side of the camera frame and towards the front.



This is the last key frame (frame 58).

These are the values for the first keyframe (frame 35) and the last keyframe (58). You can copy these values directly into the **Offset** fields in the **Motion Point** tab.


- Frame 35: 3.70 N, 41.79 E, 49.1 B
- Frame 58: 2.66 N, 25.68 W, 40.32 B



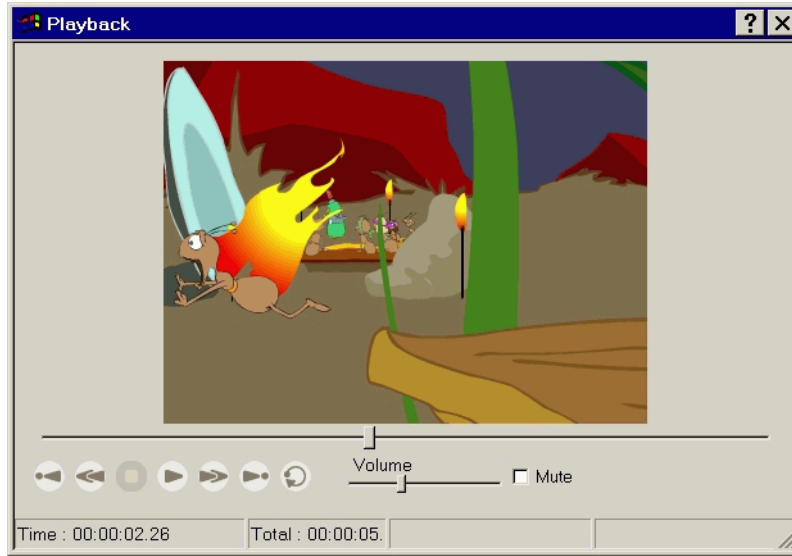
The Frame field identifies the frame number of the selected motion point.

In the Offset fields, you can type the value for the selected motion point.

To advance to the next motion point, you can click this button.

6. Click the **Show/Hide All**  button to show all elements in your animation and then select **Play > Quick SWF Playback**. This command renders your final animation so that you can play it back in real-time.

7. Use the controls in the playback window to watch your ant run across the stage. Be sure to turn-up the volume on your headphones so that you can hear the sound track that plays.



Step 5: Export

Well, you have successfully created a multiplane camera move and motion path. Now it's time to package your creation so that you can share it with friends and family!

To export your animation, follow these steps:

1. Select **File > Export > Macromedia Flash Movie**. The **Save As** dialog box opens.
2. Select a name and location for your animation and click **Save**. The **Export as Macromedia Flash Movie** dialog box opens.
3. In the **Export Type** panel, select **Full Movie** is selected.
4. Accept the rest of the default settings and click **OK**. After the animation is rendered, a playback window will open and playback your animation.

If you had any trouble with this lesson, check out the Sceneplanning_Final animation set to see how we did it.

Lesson 5: Creating Cross-Dissolves with Color Transform Elements

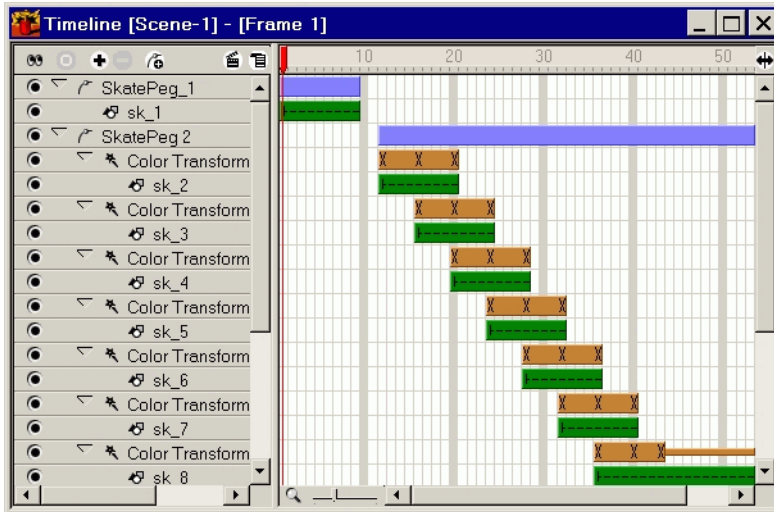
One of the new additions to **V2** is the **Color Transform** element, which you can use to change the color properties of an element over time.

In the lesson scene, a skater does some fancy tricks on a half-pipe. To accentuate his daring boardwork, you will use a **Color Transform** element to create a series of cross-dissolves that change the transparency of the skater at different frames.

There are two animation sets for this lesson:

- ColorFX_Rough
- ColorFX_Final

You will use the ColorFX_Rough animation set to follow the steps in the lesson. When you have questions that you are not sure about, you can refer to ColorFX_Final to see how we did it.



You will work mostly in the Timeline window to add and modify Color Transform elements to create cross-dissolves.



To start the **Creating Color Effects** lesson, follow these steps:

1. Open the **ColorFX_Rough** animation set in the **Lesson5_ColorFX** folder.
2. Save the animation in a location of your choice using **File > Save As**. Saving this animation set to a new location will ensure that you always have the original to return to and use should you want to.
3. Select **View > Sceneplanning Mode** to switch to Sceneplanning Mode.
4. Playback the rough animation by selecting the **Play** command from the **Play > Interactive Playback** menu.

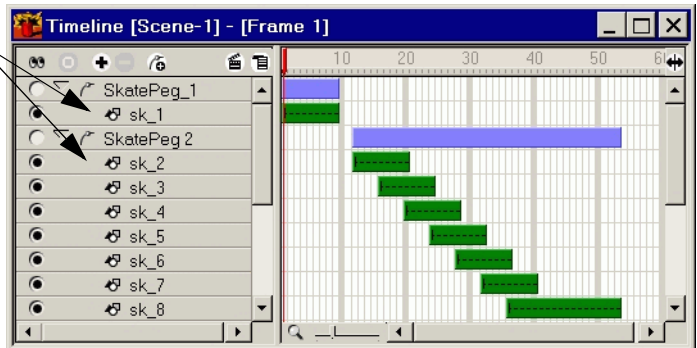
Notice how two images of the skater appear to overlap for several frames? Well, in this lesson, you are going to make the overlapping images fade-in/out to create a series of cross-dissolves (chain mix).

Step 1: Add the First Color Transform Element

To change the color of a drawing or image element over time, you attach it to a **Color Transform** element and then use the Color Transform element to specify how the colors in the elements attached to it will change.

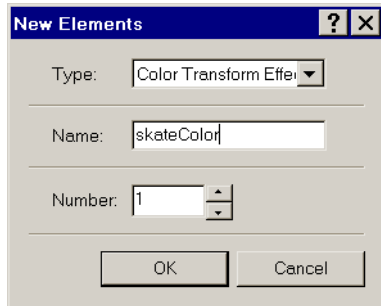
During the cross-dissolve you will create, two drawings will appear at the same time, one fades-in while the other fade-out. To achieve this effect, we placed each drawing in a separate element layer so that you can control them independently. You'll see as we progress through the lesson how this enables you to create cross-dissolves.

We have put the drawings for the skater in different elements so that we can create the cross-dissolve effect.

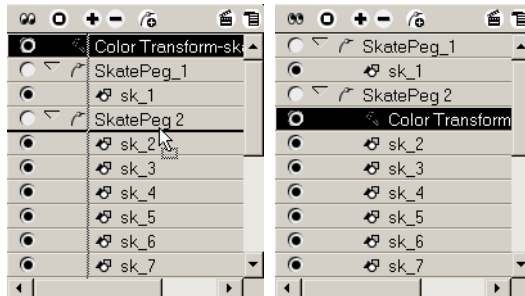


To add the first color transform element, follow these steps:

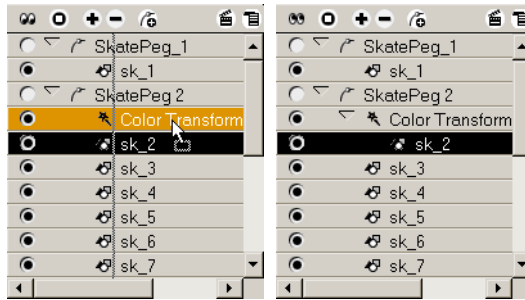
1. Click the **Add +** button at the top of the Timeline window. The New Elements dialog box opens.



2. Enter information about the element in the New Elements dialog box:
 - From the **Type** menu, select **Color Transform Effect**.
 - In the **Name** field, type *skateColor* and click **OK**. A new element layer appears in the **Timeline** window.
3. In the element list on the left-side of the Timeline window, attach the **Color Transform-skateColor** element to the **SkatePeg2** element by dragging and dropping it just below the peg.

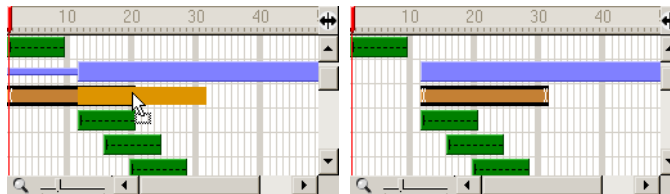


4. Attach the **sk_2** element to the **Transform-skateColor** element by dragging and dropping it on top of the effects element.

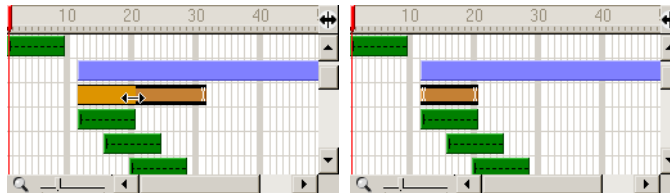


5. Change the start and duration of the **Transform-skateColor** element so that it matches the start and duration of the **sk_2** element.

- Drag the trackbar of the **Transform-skateColor** element to frame 11.



- Drag the end of the trackbar so that it ends on the same frame as the **sk_2** element (frame 20).



6. Select **File > Save** to save your animation set.

Step 2: Add Key Frames and Set their Values

In the first Color Transform effect, the drawing should fade-out from frame 16 to frame 20.

To achieve this, you must add a key frame at frame 16. Then, at the key frame on frame 20, you must make the attached elements completely transparent.

With color transforms, you can chose to do an additive or a multiplicative color transform.

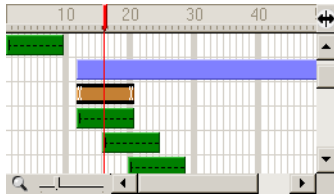
- In additive color transformations, you select a color value that is added to all of the color values in an element.
- In multiplicative color transformations, you select a value (usually between 0 and 1) and multiply this value with all of the color values in an element to arrive at a final value.

Because the effect you want to create in this lesson is an even transformation of the alpha value (transparency) of element colors, you will create multiplicative color transformations.

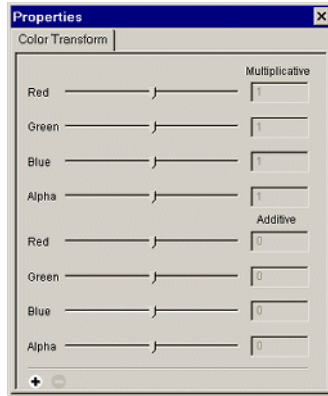
To make an element change from transparent to opaque to transparent, you must multiply the alpha values by 0, 1, and 0. When you multiply an opaque color (255 alpha) by 0, the result is 0 which makes the color transparent.

To add a key frame and set its value, follow these steps:

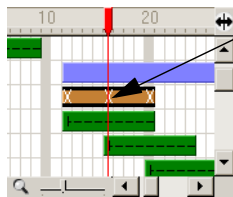
1. Advance the red frame at the top of the Timeline window to frame 16.



- From the element list on the left-side of the Timeline window, select the **Transform-skateColor** element. Notice in the Properties window (**Window > Properties**) that the Color Transform tab opens.



- In the Color Transform tab, click the **Add +** button to add a key frame to the selected frame on the **Transform-skateColor** element.



An "X" appears to identify the key frame on the trackbar.

- Advance the red frame slider at the top of the Timeline window to frame 20.
- On the Color Transform tab, drag the **Alpha** slider in the **Multiplicative** section of the tab all the way to the left. The value should appear as 0 in the **Alpha** field.



- Drag the red frame slider at the top of the window from frame 11 to 20 and watch as the element fades-out.
- Select **File > Save** to save your animation set.

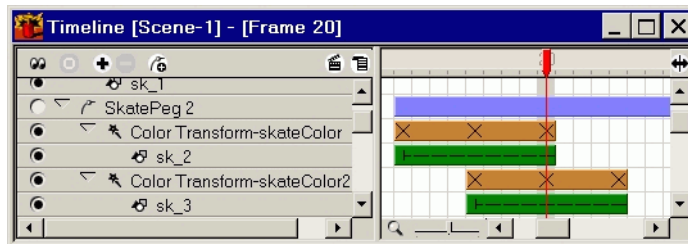
Step 3: Create the Next Color Transform Effect

In this step, you are going to create another color transform effect, for the next element in the series, that will go from transparent to opaque to transparent.

To achieve this effect, you will add a Color Transform element, set three key frames, and multiply the alpha value at each key frame by 0, 1, and 0.

To create the next color transform effect, follow these steps:

1. Add a **Color Transform** element and name it *skateColor2*.
2. Drag and drop the **Color Transform-skateColor2** element just before the **sk_3** element in the element list. This will also attach it to the **SkatePeg 2** element.
3. Attach the **sk_3** element to the **Color Transform-skateColor2** element.
4. Change the start frame of the **Color Transform-skateColor2** element so that it matches the **sk_3** element. Start frame: 16; End frame: 24.
5. Add a key frame to the **Color Transform-skateColor2** element at frame 20. Your Timeline window should now look something like this:



6. In the Color Transform tab, set the key frames to the following multiplicative alpha values:
 - Frame 16: 0
 - Frame 20: 1
 - Frame 24: 0

7. Drag the red frame slider from frame 16 to 24 and watch how the first element fades-out as the second one fades-in and then out again.

You'll notice how the drawing in the next element appears for the last five frames. In the next step you'll use the exact same color transform element to fix all of the other elements so that they undergo the same color transform effect.
8. Select **File > Save** to save your animation set.

Step 4: Clone the Color Transform Effect

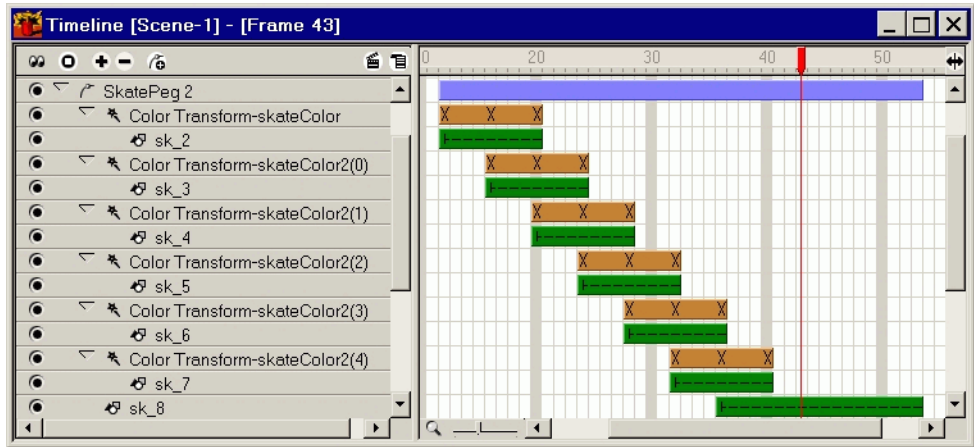
All of the remaining elements, except for the last, must undergo the same color transform effect as you created in Step 3. Rather than duplicating your efforts, you can just clone the Color Transform element and attach the other elements to it.

When you clone a Color Transform element, all of the information stored in the effect are duplicated so that you do not have to re-create key frames or their values. If you update any one clone with new values, **Toon Boom Studio™** will update all the other clones with the new values.

To clone the color transform effect follow these steps:

1. In the Timeline window, select the **Color Transform-skateColor2** element.
2. Select **Element > Clone Element**. **Toon Boom Studio™** creates a new element and names it **Color Transform-skateColor2(1)** and renames the original element **Color Transform-skateColor2(0)**. The new element appears at the top of the element list in the Timeline window.
3. Attach the new element to the **SkatePeg2** element and attach the **sk_4** element to the **Color Transform-skateColor2(1)** element.
4. Drag the trackbar of the color transform element so its start/end frame matches the element you want it to transform.
5. Repeat the previous steps for the remaining **sk_#** elements. Make sure that as you attach the skater elements to the Color Transform elements that you maintain their layer order in the element list.

When you are done, your Timeline window should look like this.



6. Playback the rough animation by selecting the **Play** command from the **Play > Interactive Playback** menu.

You just have to create the effect for the last element in the series and the effect will be complete!

7. Select **File > Save** to save your animation set.

Step 5: Create the Last Color Transform

Now, all that is left is the color transform for the last element that makes up the skater.

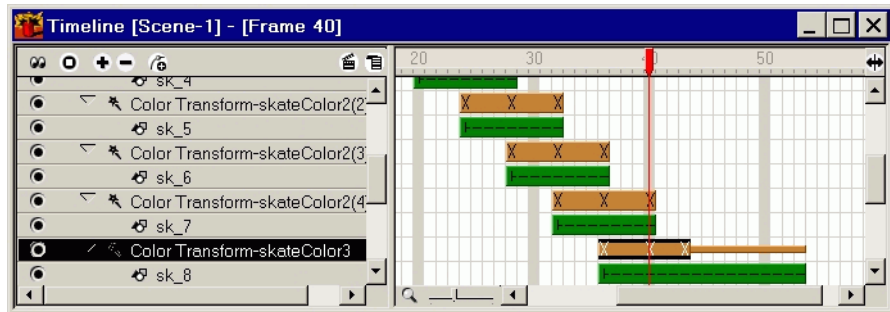
For the last color transform effect, the skater will start out transparent, become fully opaque and remain opaque for the rest of the scene.

To create this effect, you will add one key frame to a Color Transform element, give the first key frame a multiplicative alpha value of 0 and give the second key frame a multiplicative alpha value of 1.

This step is basically the reverse of step 2, in which you made the character start opaque and then end transparent.

To create the last color transform, follow these steps:

1. Add a Color Transform element and name it *skateColor3*.
2. Attach the **Color Transform-skateColor3** element to the **SkatePeg2** element and attach the **sk_8** element to the **Color Transform-skateColor3** element.
3. Change the duration of the **Color Transform-skateColor3** element to 9 frames and make the element start on frame 36.
4. Add a key frame to frame 40 of the **Color Transform-skateColor3** element. Your Timeline window will look something like this:



5. In the Color Transform tab, set the key frames on the color transform element to the following multiplicative alpha values:
 - Frame 36: 0
 - Frame 40: 1
6. Select **File > Save** to save your animation set.

Step 6: Export

That's it! You've created a pretty nifty color transform effect with the latest effects in **Toon Boom Studio™ V2**.

All that is left to do is to export your animation and watch it play!

To export your animation, follow these steps:

1. Select **File > Export > Macromedia Flash Movie**. The **Save As** dialog box opens.
2. Select a name and location for your animation and click **Save**. The **Export as Macromedia Flash Movie** dialog box opens.
3. In the **Export Type** panel, select **Full Movie** is selected.
4. Accept the rest of the default settings and click **OK**. After the animation is rendered, a playback window will open and playback your animation.

That's it! If you had any trouble with this lesson, check out the `Color_FX_final` animation set to see how we did it.

Lesson 6: Creating Clipping Mask Effects

The **Clipping Effect** element is another new addition to **V2**, which you can use to mask-out parts of an image to reveal only those portions you want to.

In the lesson scene, you will merge two extreme sports scenes (mountain bike guy and surfer guy) using a mask to reveal the second scene. While you work on this effect, we hope you learn some other things too!



See the wave hot on the trail of the biker?

That is created by a mask element in the shape of the wave, which reveals an image of a wave below it.

There are two animation sets for this lesson:

- MaskFX_Rough
- MaskFX_Final

You will use the MaskFX_Rough animation set to follow the steps in the lesson. When you have questions that you are not sure about, you can refer to MaskFX_Final to see how we did it.

To start the **Creating Clipping Mask Effects** lesson, follow these steps:

1. Open the **MaskFX_Rough** animation set in the **Lesson6_MaskFX** folder.
2. Save the animation in a location of your choice using **File > Save As**. Saving this animation set to a new location will ensure that you always have the original to return to and use should you want to.
3. Select **View > Sceneplanning Mode** to switch to **Sceneplanning Mode**.
4. Playback the rough animation by selecting the **Play** command from the **Play > Interactive Playback** menu.

Notice how the two scenes - the one of the biker and the other of the surfer - just run smack into each other? In this lesson, we'll create a transition between these two scenes out of a clip in the shape of a wave, which will reveal the surf scene. Take a look at the final animation set, **MaskFX_Final**, if you want to see what you will do.

Step 1: Drawing the Mask

Like the masks worn by partiers at a halloween ball, a **Toon Boom Studio™** mask reveals certain visual elements while hiding others (like a halloween mask reveals the eyes of the wearer, while covering most of the face).

For the first step in the creation of the mask effect, you must draw the mask that will reveal image(s) below it. You can only create masks from vector drawings.

We have already drawn a mask for you. The mask consists of a cycle of vector drawings of a wave, which will cut out an image of rolling waves beneath it.

Take a look at the mask we drew so that you know what you can do when you create your next clip effect solo.



With the onion skin on, you can see the cycle of drawings that fit together to make the mask.

To review the mask we created, follow these steps:

1. Select **View > Drawing Mode** to switch to **Drawing Mode**.
2. In the wave_mask element column in the Exposure Sheet window, press [Shift] and select frames 15 through 36.
3. Playback the selection of drawings by selecting the **Play** command from the **Play > Interactive Playback** menu.

Notice the wave cycle is a collection of painted vector drawings. The painted areas of these drawings will be like the wholes in the halloween mask that will let the images below it show through, assuming the shape of the mask drawings.

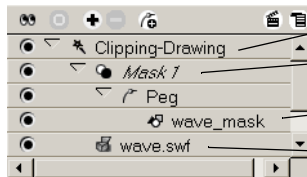
Step 2: Building the Clipping Element

After you have created the vector drawings that will act as your mask, or in this case, have seen the vector drawings that will act as the mask, you are ready to switch to Sceneplanning Mode, where you will add the Clipping Effect element.

Clipping Effect elements consist of two parts: the clip element and the mask parameter.

- To the clip layer, you attach the elements that you want to show through the mask.
- To the mask parameter, you attach the vector drawing element that you want to use as a mask.

You will notice in our setup, that we have attached the wave_mask vector element to a peg, that moves the wave in the scene.

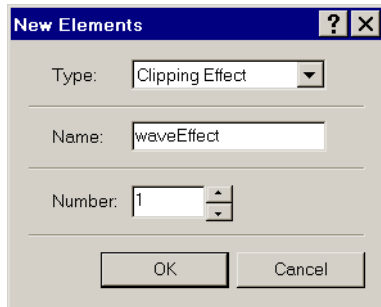


- Here's the clip layer.
- Here's the mask parameter.
- Here's the vector element that is attached to the peg.
- Here's the clip that will "show through" the mask.

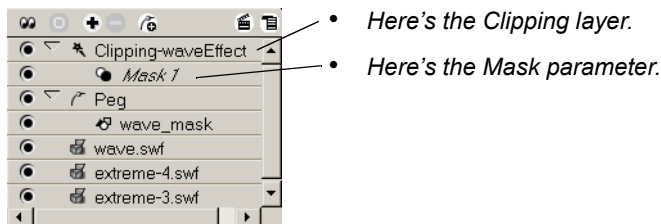
To build the mask element, follow these steps:

1. Select **View > Sceneplanning Mode** to switch to Sceneplanning Mode.
2. Click the **Show/Hide** buttons next to the wave_mask element so that you can see it.

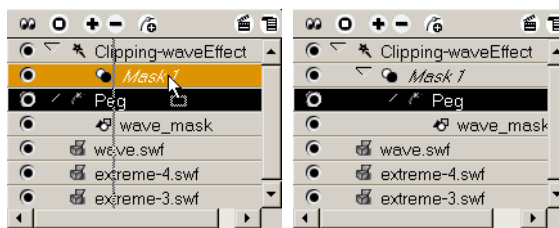
3. Click the **Add +** button at the top of the Timeline window. The New Elements dialog box opens.
4. From the **Type** drop-list, select **Clipping Effect**, type *waveEffect* in the name field and click **OK**.



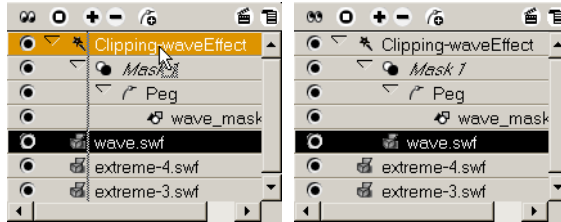
The **Timeline** window will look like this:



5. Drag and drop the **Peg** element on top of the **Mask** parameter. When you drag the Peg element, the vector element attached to it will move with it as well. You have now created the mask!



6. Drag the **wave.swf** Media element on top of the **Clipping-waveEffect** layer. The clip layers appear below the mask layers, but are indented out from the mask layers.



Step 3: Export

Well now that you have created your clip mask effect, you are ready to export and show the world the fruits of your labor!

To export your animation to SWF, follow these steps:

1. Select **File > Export > Macromedia Flash Movie**. The **Save As** dialog box opens.
2. Select a name and location for your animation and click **Save**. The **Export as Macromedia Flash Movie** dialog box opens.
3. In the **Export Type** panel, select **Full Movie** is selected.
4. Accept the rest of the default settings and click **OK**. After the animation is rendered, a playback window will open and playback your animation.

There is an element with some text in it, which we imported from an Adobe® Illustrator® file. To experiment more with the Mask effect, you can replace the existing mask with this element. Remember you will have to change the start time and exposure of this drawing so that it matches the duration of the transition.

Enjoy!

