



Toon Boom Studio™ V2 User Guide

For Windows®



www.toonboomstudio.com

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Preface

Welcome to Toon Studies

This preface presents a brief history of animation revealing the philosophy behind **Toon Boom Studio™** and suggesting how to use the application to its full potential. Also covered are the new features you'll enjoy in V2.

This preface contains the following topics:

- The Next Step in Toonvolution on page 12
- Harnessing the Boom in Your Toon on page 16
- Installing Toon Boom Studio on page 18
- New and Improved Features in V2 on page 19
- About the Documentation on page 23

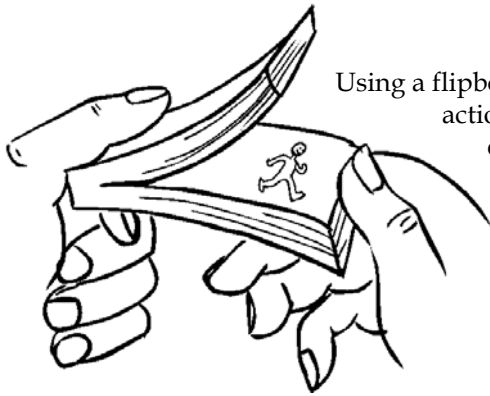
The Next Step in Toonvolution

From the earliest beginnings, mankind realized the potential of drawing. Some of the earliest cave dwellers record events by decorating the walls of caves with pictographs representing scenes from daily life, while others paint majestic scenes of migrating herds of animals.

As time passed and the artists evolved, they became aware that something was missing in their work: the ability to show movement realistically, the ability to show movement over time... the ability to animate.

In the 19th century, the phenomenon known as *persistence of vision* gave us the first glimpse into the modern animation world.

Persistence of vision refers to the way our brain retains images for a split second longer than they actually appear, making a series of quick flashes appear as one continuous picture.



Using a flipbook, you can see the persistence of vision effect in action. If you have a different sequential drawing on each page of the flipbook and you flip through the pages rapidly, the drawings appear to move.

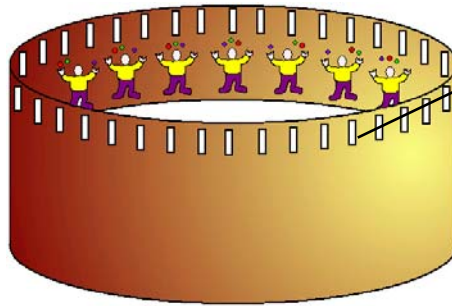
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From the Past to the Present

The first animated cartoon was created by a young magazine artist named John Randolph Bray (1879-1978) and was called *The Dachsund and the Sausage* (1910). To animate his drawings, Bray used a Zoetrope, which was a cylinder which contained each sequential drawing.

The Zoetrope had long vertical slits cut into its side in between each of the images. When you spun the Zoetrope, the slits passed in front of the eye, presenting a sequence of images, and creating the illusion of motion.



If you place your eye next to one of the slits and spin the cylinder, you will see the man juggling.

As each image passes in front of your eye your brain retains the previous image just long enough to fool you into thinking that the new image replacing it actually moves.

Excited over the success of his cartoon, John Bray teamed up with fellow cartoonist, Earl Hurd, who was independently developing a similar process using clear celluloid sheets. Hurd's approach used a static painting as a background with the characters inked onto the celluloid sheets.

Bray took the idea further by introducing multiple layers of celluloid, each layer carrying a separate element of the scene. The advantage of this cel-based process was to greatly reduce animation production cycles and it was quickly adopted by every major animation studio in the world.

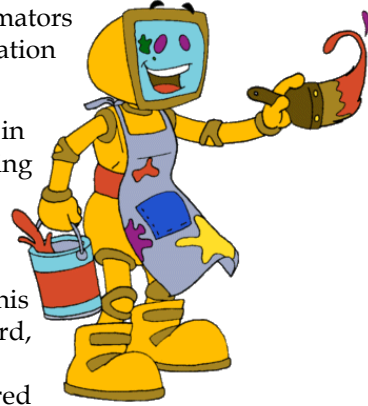
By the early 1920's, a basic assembly line process was already in use. Tasks like Inking and Painting were separated into distinct departments. A number of sophisticated cartooning methods such as; the use of gray tones, between scene camera dissolves, iris close-ups, title cards, and live-action integration were being developed. However, the major innovation of this era was the introduction of the cel process.

The cel process and it's basic concepts are used in many of the computer software programs, producing special effects, independent movement of objects, and overlapping levels of action.

As the animation technology evolved, the overlay idea was enhanced to include multiple translucent pieces of cels, a peg system for dead accurate registration, and the innovative use of long sheets of paper for drawing the background images.

These early studios produced some of the animators who are now considered the pioneers of animation such as:

- **Max Fleischer:** patented rotoscoping in 1915 (drawing images on cels by tracing over previously recorded live action), and later created *Betty Boop*
- **Walt Disney:** destined to become the animation superpower, not only does his studio introduce the use of a storyboard, pencil sketches, and the multi-plane camera stand, but Disney also pioneered the use of sound and color in animation.



See Also

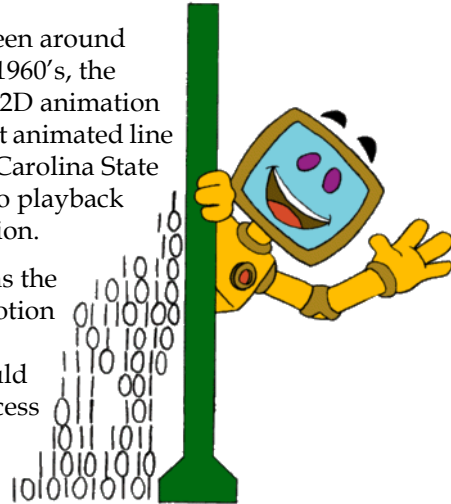
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Bridging the Traditional and Computer Eras

Computer animation usually refers to systems that digitalize hand-drawn animation cels. Computer animation production borrows most of the ideas from conventional animation production including the use of a story board, test shots, pencil testing, key frames, and tweening.

Computer-assisted animation has been around longer than you may realize. In the 1960's, the University of Utah became a digital 2D animation pioneer when they produced the first animated line drawings. By the mid-1970s, North Carolina State University was using real-time video playback from digital disk to produce animation.

If you define traditional animation as the process of creating the illusion of motion by viewing a series of individual drawings successively, then you could define computer animation as a process of digitally recording drawn cels, sorting them on an electronic storyboard, and displaying them electronically in succession, creating a digital scene.



See Also

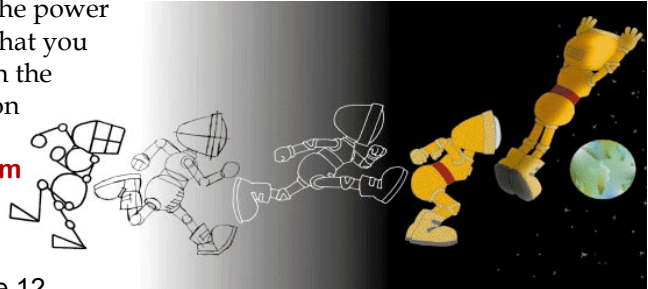
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Harnessing the Boom in Your Toon

Toon Boom Studio™ is the state-of-the art tool of choice for today's Web animators. What once took multiple software packages to produce a single piece of animation is now all contained within one system.

We designed **Toon Boom Studio™** to suit the many different types of animators out there. So here's what you can expect to find in **Toon Boom Studio™** from the following perspectives:

- **Traditional Animator:** you'll feel right at home animating with our electronic exposure sheets, virtual animation disk, rotary light table, the ink & paint utilities, and storyboarding tools.
- **Digital Animator:** we used the **USAnimation®** system, the industry-standard for the high-end studios, as a blueprint when designing **Toon Boom Studio™**. At the heart of the **Toon Boom Studio™** system, you'll find the best parts of the **USAnimation®** system at your command to produce heart-stopping Web animation!
- **Flasher:** you'll enjoy the flexibility to work in both Macromedia® Flash™ and **Toon Boom Studio™** and love how you'll be able to take your animations to the third dimension with the ground-breaking 3D stage in **Toon Boom Studio™**.
- **Illustrator:** combine the power drawing capabilities that you love in Illustrator with the exciting new animation possibilities you'll discover in **Toon Boom Studio™**.



See Also

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Sceneplanning and Tweening

You create motion, scaling, and rotation effects in **Toon Boom Studio™** by attaching content layers to elements called Pegs. You set the start value and end value for an entire element in the Peg and **Toon Boom Studio™** interpolates all of the images in the attached elements to create animated effects that unfold gradually.

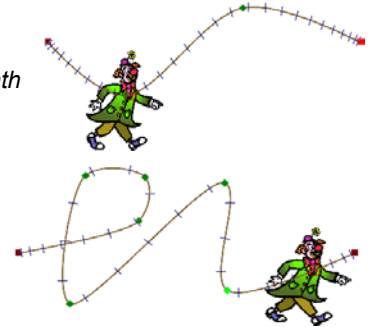


Each element layer contains a set of drawings that you can repeat as often as necessary to complete your motion effect.

Plot the start and end frames of a motion path on a peg.



Add a control point on the motion path and drag it to change the motion path's shape.



The element follows the motion path.

Toon Boom Studio™ does not tween images. Tweening creates mechanistic changes that look unnatural for objects that squash and stretch as they change in the real world. Some of the limitations with tweening are as follows:

- Tweening an element layer to move and rotate or scale is very time-consuming.
- To make even the slightest adjustment to a motion path, you must rebuild the tweened images.
- Tweened images can sometime lead to unpredictable and messy results that you must correct manually.

See Also

Harnessing the Boom in Your Toon on page 16

Installing Toon Boom Studio

System Requirements

- 233 MHz Intel® Pentium® II or higher processor
- Microsoft® Windows® 2000, Windows 98, Windows ME or Windows XP
 - ⇒ If you are using Windows 2000 or XP, you must have administrator rights to install software. Installation error messages may appear if you don't have these rights. See your system administrator if you have installation problems.
 - ⇒ If you are using Windows 98, you must have installed Internet Explorer V 5.01 service pack 2, or better.
- 64 MB of RAM
- 100 MB of available hard disk space
- 24-bit color display capable of 1024x768 resolution
- Wacom® Tablet is recommended
- Apple QuickTime® Version 5

To install Toon Boom Studio, follow these steps:

1. Start the installation program: `setup.exe`.
 - If you received **Toon Boom Studio™** on a CD, insert the CD in your CD-ROM drive. Click **Start > Run**. Click **Browse** and choose the `setup.exe` file from the **Toon Boom Studio™** CD.
 - If you downloaded **Toon Boom Studio™** from our website, uncompress the file you downloaded, locate `setup.exe` from the uncompressed files and double-click the file to start the installation process.
2. Follow the onscreen instructions to complete the installation.

New and Improved Features in V2

Toon Boom Studio™ V2 provides you with many new features that will improve your animation experience and help you tool better toons!

Effects!

- Color tweening: change the color of elements over time with color tweening.
- Clip masks: create masks to reveal only certain portions of your animation. You can even have the mask change over time with the use of pegs.

Drawing

- Polyline tool: connect points to draw objects. Control the shape of the object with Bezier editing tools.
- Cutter tool: use a selection to cut pieces from your drawings.
- Grouping of drawing objects: combine drawing objects into one to improve drawing object management.
- Vector optimization: smooth your vector drawings and merge layers to reduce the complexity of your drawings and the files size of your Macromedia® Flash™ movies.
- Reposition all drawings: when you import scanned images, they can appear offset from the center. Now you can move all of the contents of an element to a new position so that you can see and work on them with ease.
- Flip and rotate your drawings.
- Improved navigation of Drawing Mode windows and nudging of drawing objects.
- Paste in place: cut and paste drawing objects in new cells or elements, in the original position.
- Draw from center: use the [ALT] key to draw round and rectangular shapes from the center of your mouse.
- Improved stroke identification: when you turn on show strokes, unconnected points appear in a different color than points that intersect so that you can modify those points easier.
- Change rotation pivot point: you can now change the position of the pivot point when you rotate drawings with the Select tool in Drawing Mode.

Importing

- Considerable improvements to Adobe® Illustrator® import, including support for V5 through V10 and the PDF format.
- Improved support for media clips in Macromedia® Flash™ movies.
- Improved support for color tweening: import Macromedia® Flash™ movies with color tweens and they will be preserved in **Toon Boom Studio™**.
- Support for streamed sounds imported from Macromedia® Flash™ movies.
- Texture as image element: import Macromedia® Flash™ movies with bitmap fills and **Toon Boom Studio™** will transform the bitmaps into image elements.
- Import and vectorize all bitmap file formats.
- Centered SWF Import: when you import Macromedia® Flash™ movies, they are now centered on the stage.

Inking and Painting

- Auto gap closing: close gaps as you paint and set your tolerance level.
- Painting with textures: use bitmap images as paint fills for your drawing objects.
- Editing texture: edit the center, rotation, and distribution of gradient and texture fills.

Sound

- Sound scrubbing: control playback of dialog tracks so that you can determine how you want to lip sync a track.
- Lip sync template: automatically map your character's mouth positions to the lip chart generated from a sound element.
- QuickTime® audio support: export sound with your QuickTime® movies.
- Stream audio: export your Macromedia® Flash™ movies with streamed audio, which improves synchronization between images and sound.
- Improved support for different sound qualities.

Timeline and Exposure Sheet

- Create cycles: now you can repeat a sequence of drawings with ease by creating a cycle. You can even create more complicated cycles, such as those that go forward and back, using the Advanced Create Cycles feature.
- New ways to change exposure time: extend the exposure of a drawing by selecting the last cell you want it to appear in.

- Shortcuts for add/remove exposure: change the exposure of selected drawings using shortcut keys.
- Drag & Drop reordering of drawings in the Timeline window.
- Copy & Paste drawings from Timeline window.
- Swap drawings from Sceneplanning Mode. You don't have to switch to Drawing Mode anymore to change the drawing that appears at a frame, or its exposure.
- Option to display "Feet and Frames" in Timeline window.

3D Sceneplanning

- Live update of 1D Editor functions: make changes using the 1D Editor, and your changes display automatically in the View windows.
- Copy & Paste the qualities of a control point or key frame to another point.
- Navigate to and nudge motion points with keyboard keys.
- Different first and last frames on pegs makes it easier for you to identify and select these key frames on the motion path of a peg.

Templates

- Preview templates using thumbnails or in the preview pane of the newly designed Library window (was the Template Browser).
- Seamless editing: edit templates, save your changes, and **Toon Boom Studio™** automatically updates all animations that link to the template.
- Improved template color, file and catalog management features.

Exporting

- Exporting media elements as movie clips in Macromedia® Flash™ movies.
- Export to the Plazmic™ SVG format for mobile devices.
- Support for alpha channel information in the export to QuickTime®.

General

- Save As: save your animation set in a new location, with a new name.
- Close: close the current animation set without exiting the program.
- Scene background color: set the background color of each scene.
- Keep all settings when switching mode: switch between Sceneplanning Mode and Drawing Mode and maintain your toolbar and window layout.
- Improved menu organization and tool access.
- Support for localization for international users.

See Also

Harnessing the Boom in Your Toon on page 16

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About the Documentation

We know that you're anxious to get started with **Toon Boom Studio™** and knock the socks off the Web animation community with your latest creation. That's why we've structured this user guide to be task-based. After you understand how to perform a basic task (like creating a color palette), you can start getting creative with it, unlocking the true power of **Toon Boom Studio™**.

Here are some suggestions on how to use the User's Guide efficiently:

- If you want to find information on how to perform a task, use the **Table of Contents** at the front of the book.
- If you want to find reference-type information on a specific item, use the **Index** at the back of the book.

You can also use the context-sensitive online help that you can access from the **Help** menu in **Toon Boom Studio™**.



Stay up-to-date with the latest information on **Toon Boom Studio™**! As the software and the community evolve, we'll be posting updates to the documentation on the website which can include release notes, updated online help topics, advanced tutorials, and tips and tricks.

Log onto www.toonboomstudio.com and check out the latest updates to the documentation!

See Also

Harnessing the Boom in Your Toon on page 16
The Next Step in Toonvolution on page 12
New and Improved Features in V2 on page 19
Document Conventions on page 24
Using the Online Help on page 26

Document Conventions

The manuals provided with **Toon Boom Studio™** use the following conventions.

- Selecting Menu Commands

When you need to select a command from a menu, the documentation lists what you need to select in the following order: **Menu name > Command**.

For example, if you want to select the **Open** command from the **File** menu, the instruction would read as **File > Open**.

If there is a series of sub-menus, they will appear in the order in which you would need to open them. For example, if you needed to select **Macromedia Flash Movie** from the **Export** sub-menu in the **File** menu, the instruction would read as **File > Export > Macromedia Flash Movie**.

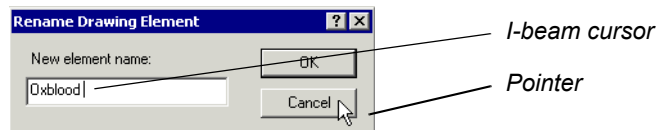
- Pointer vs. Cursor

When you want to enter text or numbers into a dialog box, the mouse pointer changes to an I-beam cursor as you move it over the dialog box, indicating that you can now type information into that location.

⇒ Pointer refers to the shape on your screen (usually an arrow) that represents the position of your mouse.

⇒ Cursor refers to the I-beam where you enter text.

- A blinking I-beam indicates that the cursor is active.
- If the I-beam is not blinking, the cursor is not active and typing is ineffective.



See Also

Harnessing the Boom in Your Toon on page 16
The Next Step in Toonvolution on page 12
New and Improved Features in V2 on page 19
Using the Online Help on page 26
Mouse Actions on page 25

Mouse Actions

Throughout the **Toon Boom Studio™** documentation, the following terms describe which mouse button to use to perform an action.:

Term	Action
Click or Left-click	Click the left mouse button
Right-click	Click the right mouse button
Double-click	Click the specified mouse button twice rapidly without moving the mouse.
Shift-click	Hold down the [Shift] key and simultaneously click the specified mouse button.
Ctrl-click	Hold down the [Ctrl] key and simultaneously click the specified mouse button.
Click-hold	Click the specified mouse button and hold without releasing while performing the function.
Drag	Click-hold the object and move the mouse while keeping the mouse button pressed down.

See Also

Harnessing the Boom in Your Toon on page 16
The Next Step in Toonvolution on page 12
New and Improved Features in V2 on page 19
Using the Online Help on page 26
Document Conventions on page 24

Using the Online Help

Toon Boom Studio™ comes with online help that you can use to find descriptions of application features or tasks that you want to perform. With the online help, you do not have to leave your computer to find the answers you need.

There are two parts of the **Toon Boom Studio™** online help:

- **Microsoft® HTML Help:** provides descriptions of all the tasks you may want to perform, as well as descriptions of **Toon Boom Studio™** concepts and interface features.

To open the comprehensive **Microsoft® HTML Help**, click the **Help** button on the **Main** toolbar, select **Help > Online Help**, or press F1.

In the left navigation frame, the Contents tab displays the help topics, which are organized into task and reference sections. You can also use the Index tab or full-text Search tab to find answers to your questions.

- **Context-Sensitive Help:** provides short definitions of various interface features.

To get a description of a menu command or toolbar button, select **Help > What's This** and click the item you want a description of. A pop-up window opens with a description of the item you clicked. You can click anywhere to close the pop-up window. You can also right-click an item and select **What's This** from the pop-up menu.

See Also

Harnessing the Boom in Your Toon on page 16
The Next Step in Toonvolution on page 12
New and Improved Features in V2 on page 19
Document Conventions on page 24

Chapter 1

Studio Basics

This chapter provides you with a quick overview of how you can use **Toon Boom Studio™** to create Web-ready animations.

It also explains how to use this User's Guide so that you can learn how to use **Toon Boom Studio™** quickly and to it fullest potential.

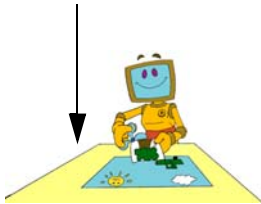
This chapter contains the following topics:

- The Toon Boom Studio Workflow on page 28
- Creating and Saving Animation Sets on page 38
- Setting up Your Studio Session on page 47

The Toon Boom Studio Workflow

Toon Boom Studio™ uses the power and logic of traditional animation production, yet has a workflow flexible enough to support the creative processes involved in the Web animation. Below are the high-level steps in the **Toon Boom Studio™** animation workflow. The details of these steps are explained in the sections and chapters that follow.

1. Create an animation set.



2. Draw line art and gather multimedia.



3. Add the sound track and draw lip synced drawings.



4. Ink and paint your drawings.



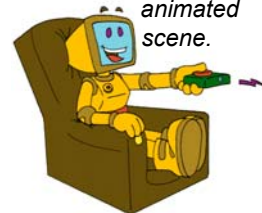
5. Change the sequence and timing of images.



6. Choreograph the elements in your scene.



7. Export the final animated scene.



Just like any project, your animation set will evolve and change over time. As you work on your animation project, you'll find yourself jumping forwards and backwards in this process.

- Maybe you'll adjust the timing in the exposure sheet from your original calculations.
- Just when you finish a scene, you'll be hit with a sudden inspiration and realize you'll need to draw a new character in the scene.
- Then you might need to paint the new drawings and create a new motion path to match the existing action in the scene.

Toon Boom Studio™ makes it easy to make adjustments with the minimum amount of disruption.

See Also

Step 1: Create an Animation Set on page 29

Setting up Your Studio Session on page 47

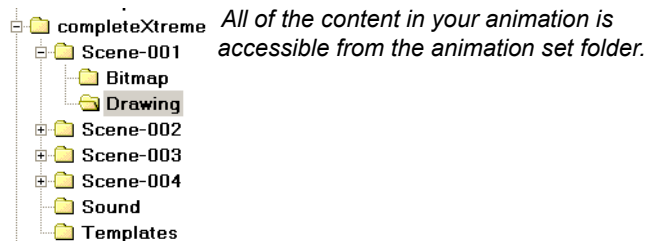
Creating and Saving Animation Sets on page 38

Setting the Frame Rate and Size of Your Movie on page 39

Step 1: Create an Animation Set

When you are ready to build your animated production, you must create an *animation set*.

An *animation set* is a project folder that contains all of the drawings, bitmaps, sounds, and effects in your animation, as well as all of the timing, lay out and motion changes you build.



See Also

Creating and Saving Animation Sets on page 38

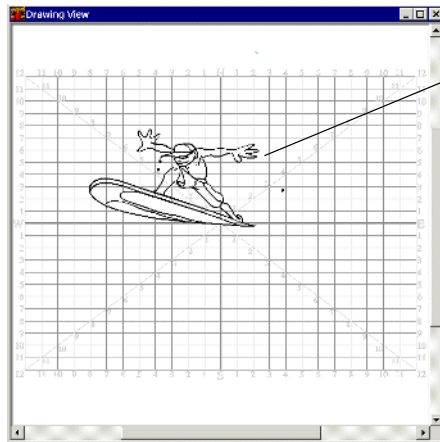
Step 2: Draw Line Art and Gather Multimedia on page 30

Step 2: Draw Line Art and Gather Multimedia

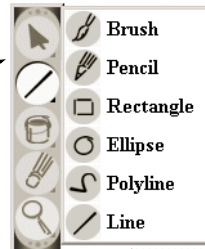
You take your first steps in the animation process in the Drawing Mode. This mode provides you with a workspace and a set of tools for you to develop the visual content of your animation.

In Drawing Mode, you perform the following tasks:

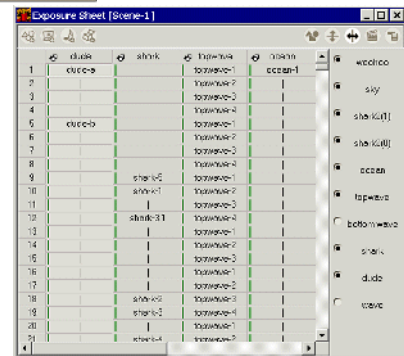
- Add element layers to your **Exposure Sheet**.
- Draw the contents of your animation layers. Drawing tools, help you create vector images that are key to producing high-quality, small size, animation.
- Import background images into your element layers.
- Import multimedia, such as complete Macromedia® Flash™ movies and audio files. **Toon Boom Studio™** studio provides a unique system of content management that can help you re-use animation elements.



Use the Drawing View window to create your vector drawings.



Drawing tools help you create vector images.



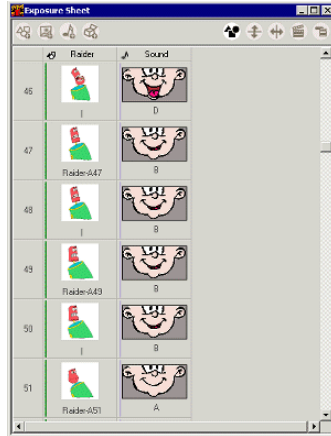
Use the Exposure Sheet like a storyboard, so that you can see all of the action in your scene at a specific frame number.

See Also

Step 3: Add the Sound Track on page 31
Drawing Line Art on page 114

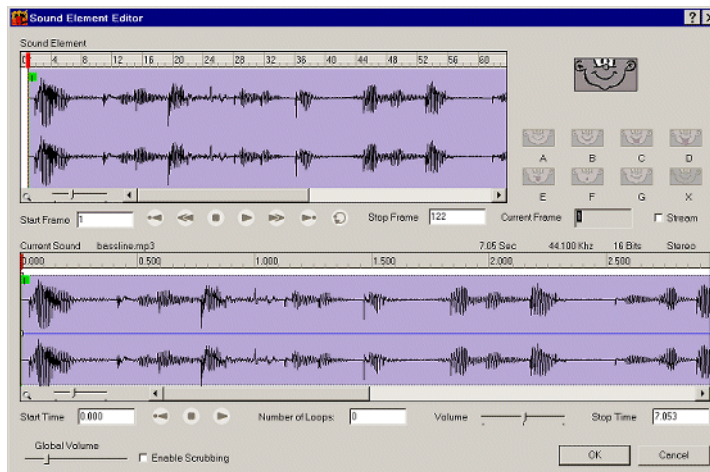
Step 3: Add the Sound Track

You can use **Toon Boom Studio™** voice track analyzer to identify the lip positions that you must draw to match the voice track in each frame.



The lip positions of this character match the sound of the voice track. You can use these images as a reference while you draw your own character's lips to match the voice track.

Combine this with the Sound Element Editor to fine tune the sound synchronization.



The sound editor gives you precise sound synchronization.

See Also

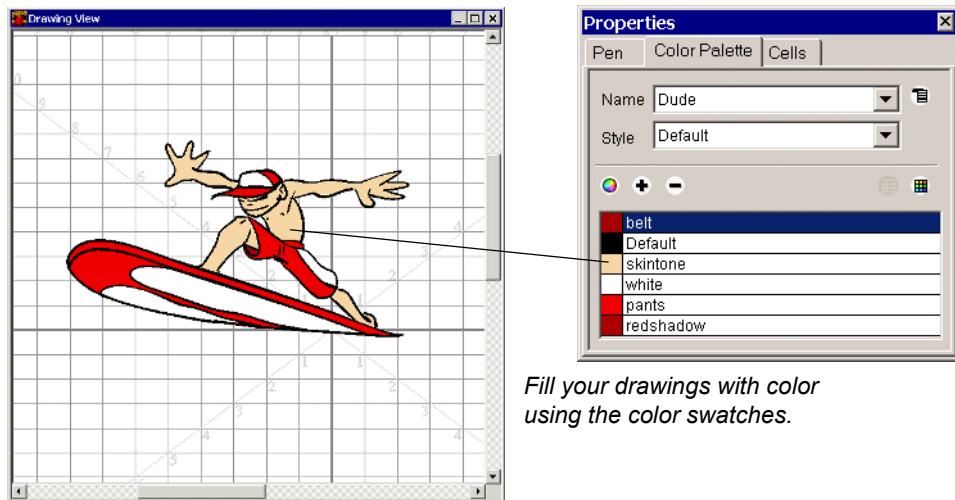
Step 4: Ink and Paint Your Drawings on page 32

Step 4: Ink and Paint Your Drawings

After you complete the line art, you are ready to fill your drawings with color. **Toon Boom Studio™** provides a color palette management system that simplifies the creation and organization of your project colors.

With **Toon Boom Studio™** you can:

- Create color palettes for each character.
- Create palettes for different versions of a character's color palette (for example, a day and night palette).
- Change all of the color swatches in a palette style.
- After you mix your project colors, you can easily ink and paint the line art and zones with the painting tools. If you change the properties of a zone or a line after you paint them, **Toon Boom Studio™** updates all of the painted zones and lines with the new properties of the color swatch. This saves you from having to repaint your drawings when your palette changes.



Fill your drawings with color using the color swatches.

See Also

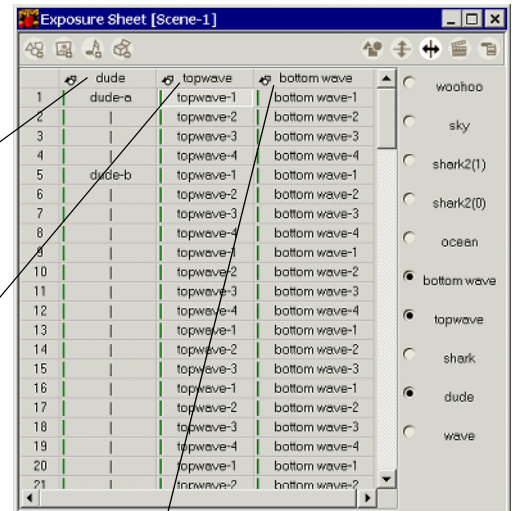
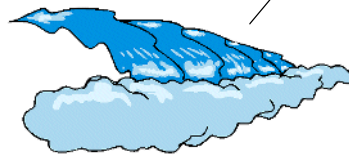
Step 5: Change the Sequence/Timing of Images on page 33
Coloring Your Toon Boom Studio World on page 178

Step 5: Change the Sequence/Timing of Images

The Exposure Sheet allows you to keep track of all the drawings and element layers in your scene (characters, objects, backgrounds). Each row represents one frame in your animation. If you look across a frame in your exposure sheet, you will see what drawing or image appears together in one frame of your animation.

The Exposure Sheet also identifies how long a drawing or image appears in your scene; this is known as “exposure”. As you work out the motion of your characters, you may have to adjust the exposure of drawings, or their order. You may also need to add drawings to make a motion more fluid and convincing. The Exposure Sheet manages your elements and their contents for you.

Each image in your scene has it's own element column, which is made up of a series of individual drawings.



As your scene evolves, you may need to add, remove, rename or use drawings, as well as elements. Your exposure sheet acts as a link to your database of drawings, images, sound and media, keeping track of their layering order and timing.

See Also

Step 6: Choreograph the Elements in the Scene on page 35

Exposure Sheet and Timeline Windows on page 354

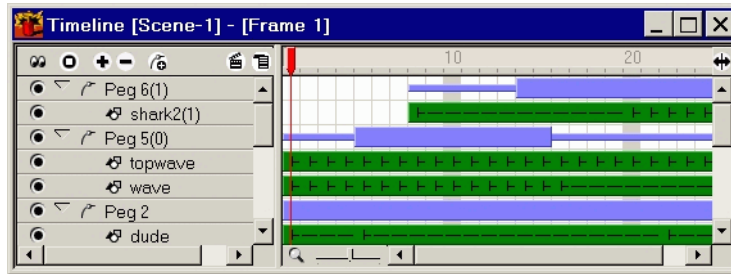
Layering Elements on page 371

Sequencing Element Contents on page 386

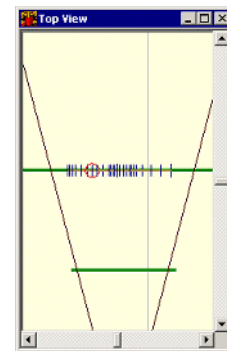
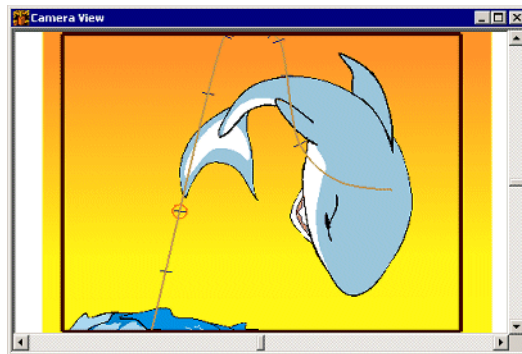
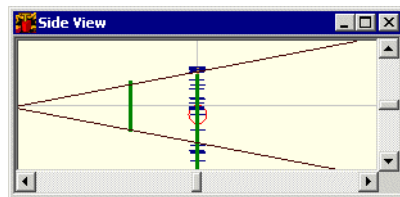
Timing/Exposing Drawings and Images on page 401

Step 6: Choreograph the Elements in the Scene

After you ink and paint your drawings and work out their exposure, you are ready to use the 3D Sceneplanning space to lay out your elements and make them change over time. With the Timeline window, you can see when elements start and end. You can use the Timeline window to add and manage peg and camera elements.



In Sceneplanning Mode, you can view your element layers from three different perspectives. This allows you to see how elements work together through the scene.

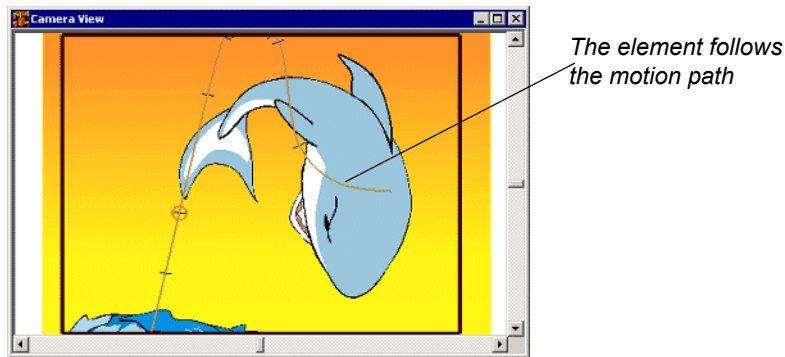


Three different perspectives for viewing element layers.

With 3D Sceneplanning, you can:

- Change the north/south and east/west position of element layers. You can also change the front/back position of elements to create a sense of depth in your scene.
- Change the rotation or size of element.
- Use pegs to create multi-plane effects. With 3D Sceneplanning, you can move elements through a scene.
- Create camera effects, such as pans, trucks and zooms.

In the 3D Sceneplanning space, you can also map out the motion path of elements through three dimensions.



With all transformations you make to an element layer in Sceneplanning Mode, **Toon Boom Studio™** automatically interpolates all of the drawings in the element layer so that you do not have to do any tweening! The quality of your images is preserved through all transformations thanks to vector technology.

At anytime during the process, you can perform quick tests to check your animation or see it in real-time. You may find during these checks that you have to make corrections. You can move back and forth in the workflow to make additions and corrections to perfect your animation.

See Also

Step 7: Export on page 37

Basic Sceneplanning Concepts on page 238

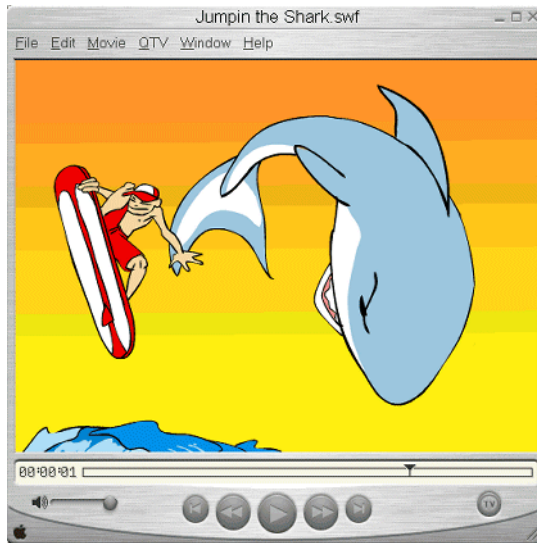
Changing Elements Over Time with Pegs on page 260

Step 7: Export

Now it's time to export your scenes and produce a final movie.

You can export the final movie clip in one of the following formats:

- Macromedia® Flash™ format (SWF)
If you are working with Macromedia® Flash MX to add interactivity to your animations, you don't even have to export to SWF. You can use the **Toon Boom Studio™ Importer** (TBSi) for Macromedia® Flash MX to import your animations directly so that you can add ActionScript programming.
- QuickTime® format (MOV)
- Plazmic™ Mobile SVG Movie



Launch the player and view your exported movie as soon as it is ready.

Toon Boom Studio™ follows the order of the scenes in your Scene Manager window and exports each scene in sequence to create one seamless movie complete with animation, movement effects, and sound.

See Also

Exporting to Flash on page 433

Exporting to QuickTime on page 438

Exporting to Plazmic SVG on page 442

Creating and Saving Animation Sets

When you are ready to build your animated production, you must create an *animation set*. An *animation set* is a project folder that contains all of the drawings, bitmaps, sounds, and effects in your animation, as well as all of the timing, lay out and motion changes you build.

When you create your animation set, the name you select becomes the name of your project folder and the **Toon Boom Studio™** project file. Inside your animation set folder are folders for:

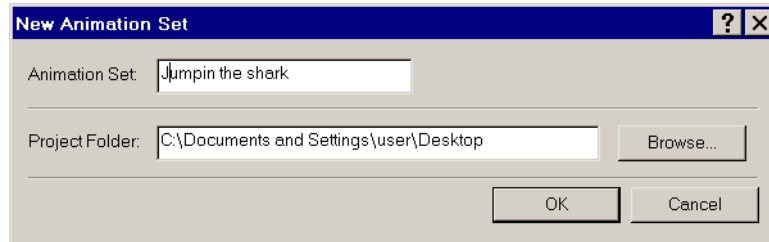
- Sound files
- Local templates
- Scene

Each scene folder contains folders for:

- ⇒ Vector drawings
- ⇒ Bitmap graphics

To create an animation set, follow these steps:

1. Click on **File > New**. The New Animation Set dialog box opens.



2. Type the name of the animation set into the **Animation Set** field. You are limited to a maximum of 20 characters including spaces.
3. Type the location and name of the Project Folder. Or use the Browse feature to locate the correct Project folder.
4. Click **OK** to create the Animation set.

After you build your animation set and the **Toon Boom Studio™** system creates the necessary folders, you can start working on the creative elements of your animation.

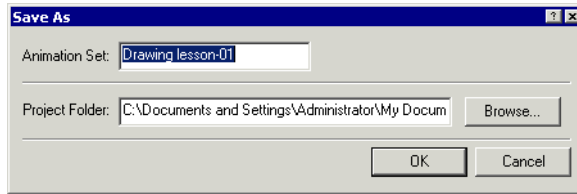
To save your changes to the animation set:

- Select **File > Save**.

When you activate the **Save** command, **Toon Boom Studio™** saves the open animation set using the name and location you gave the project when you created the animation set.

To save the animation set using the Save As command, follow these steps:

1. Select **File > Save As**. The Save As dialog box opens.



2. Type the new name of the animation set into the **Animation Set** field. You are limited to a maximum of 20 characters including spaces.
3. Type the location of the animation set in the **Project Folder** field or click the **Browse** button to locate a folder.
4. Click **OK** to save the animation set to the new name and location.

See Also

Step 1: Create an Animation Set on page 29

Adding Scenes to a Movie on page 41

Setting the Frame Rate and Size of Your Movie on page 39

Changing the Background Color of a Scene on page 42

Setting the Frame Rate and Size of Your Movie

The frame rate and camera size you set for your animation determines how your animation is rendered during export and playback.

- The frame rate sets the speed at which the movie will playback. The higher you set the frame rate, the faster your animation will play. By default, the frame rate is set to 12 frames per second.
- The camera size defines the resolution of your final animation. **Toon Boom Studio™** uses that camera to render the final movie. The larger the camera resolution, the larger the scene space you have.

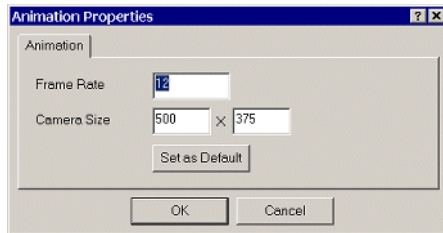
Although you can change the size of your movie at any time, you must set the frame rate before you import any sound.



If you change the frame rate after you add your sound elements, you run the risk of de-synchronizing the sound effects with the animation.

To define the frame rate and size of your movie, follow these steps:

1. Select **File > Properties**. The **Animation Properties** dialog box opens



2. Type the frame rate at which you want to play the rendered movie in the **Frame Rate** field. The following frame rates are commonly used:
 - 1, 2, 12, 24, and 30 frames per second.
3. Type the size of the final movie in the **Camera Size** fields.
 - **Left field**: the width of the movie.
 - **Right field**: the height of the movie.The following resolutions are commonly used:
 - ⇒ 160 x 120
 - ⇒ 320 x 240
 - ⇒ 640 x 480
 - ⇒ 720 x 540 (NTSC)
4. Click **OK** when done.

See Also

Real-Time Playback on page 431
Exporting to Flash on page 433
Exporting to QuickTime on page 438
Exporting to Plazmic SVG on page 442

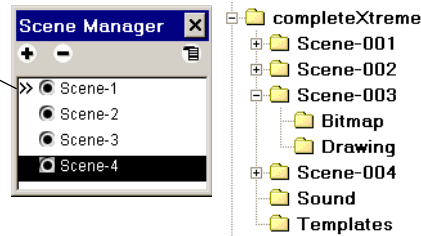
Adding Scenes to a Movie

You can add scenes to your animation set to organize and manage the contents of your movie.

The Scene Manager window provides you access to all of the scenes in your animation. You can use this window to show/hide the scenes you want to render, as well as change the order of the scenes in your movie.

When you add scenes to your movie, **Toon Boom Studio™** adds a scene folder to the animation set folder on your system.

The arrows next to the scene's name in the scene list indicates that this scene is the active scene.



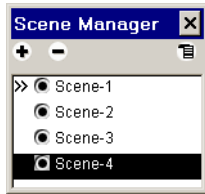
All scenes in an animation set share the following:

- Palettes, palette styles, and swatches
- Pen styles
- Templates
- Sounds
- Exposure Sheet/Timeline window colors
- Default UI colors

If you make changes to any of these traits, **Toon Boom Studio™** updates them in all the scenes in your animation set. This allows you to maintain a consistent look throughout your movie.

To add scenes to your movie, follow these steps:

1. Select **Window > Scene Manager** to display the **Scene Manager** window.



2. Click **Add Scene +** to create a new scene. By default, **Toon Boom Studio™** assigns a name to each new scene that you can change later

A new scene appears in the Scene Manager window and an empty exposure sheet or timeline (depending on the mode you are in) appears in the **Toon Boom Studio™** window.


See Also

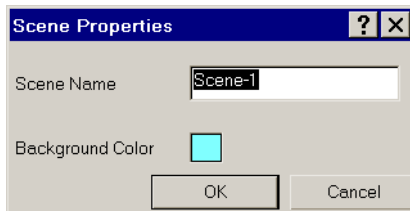
Reordering Scenes on page 44
Renaming Scenes on page 44
Deleting Scenes on page 46
Changing the Background Color of a Scene on page 42
Showing/Hiding Scenes on page 45

Changing the Background Color of a Scene

The background color of all scenes is white by default. You can change the background color of each scene in your movie to suit the context of the action.

To change the background color of a scene, follow these steps:

1. Select the scene in the **Scene Manager** window.
2. Click the **Contextual Menu**  button and select **Properties**. The **Scene Properties** dialog box opens.



3. Double-click the **Background Color** square. The **Color** dialog box opens.
4. Select a color for the scene background or create your own by clicking **Define Custom Colors**.
5. Click **OK** when you are done and **Toon Boom Studio™** will update the scene with the new background color.

You can show/hide the scene background color in the Drawing View window in Drawing Mode or in the Camera View window in Sceneplanning Mode.

To show/hide the scene background color in the Drawing View or Camera View windows:

- Select **View > Show scene background color**.
 - ⇒ When this option is activated, the scene background color will appear in the Camera View and Drawing View windows.
 - ⇒ When this option is not activated, the background color of these windows is determined by the **Drawing/Camera** setting on the **Interface** tab of the **Preferences** dialog box.

See Also

Changing the Background Color of the Drawing and Camera View Windows on page 51

Changing the Color of an Element on page 383

Changing the Track Color in the Timeline on page 370

Reordering Scenes

When you playback or export an entire animation set with multiple scenes, **Toon Boom Studio™** exports the scenes in the order in which they appear in the Scene Manager window. If you want to change the playback order of the scenes, you must resort them in the Scene Manager window.

To change the order of scenes in the Scene Manager window, follow these steps:

1. Select the scene you want to move in the **Scene Manager** window.
2. Drag it to its new position in the **Scene Manager** window.

A grey bar appears between the scenes to indicate where you can drop the selected scene.

The new order of the scene will also appear in the **Scene Manager** pop-up menu.

See Also

Renaming Scenes on page 44

Deleting Scenes on page 46

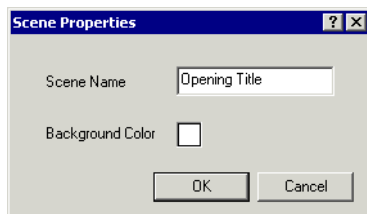
Renaming Scenes

When you start a new project, you always begin with one scene. By default, this exposure sheet is called Scene-1, and every scene you create after that gets a sequentially numbered default name (Scene-2, Scene-3, and so on).

At any time, you can rename scenes with more descriptive names that more fully reflect the content.

To rename a scene, follow these steps:

1. Right-click the scene name and select **Properties** from the pop-up menu. The **Scene Properties** dialog box opens.



2. Type the new name for the scene in the **Scene Name** field and click **OK**. You cannot name two scenes with the same name.

The new scene's name appears in the **Scene Manager** window. When you select a scene from the **Scene** button in the **Exposure Sheet** window, the customized names of your scenes also appear.

See Also

Reordering Scenes on page 44
Deleting Scenes on page 46
Changing the Background Color of a Scene on page 42
Showing/Hiding Scenes on page 45

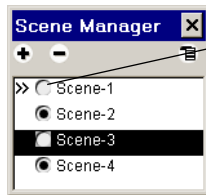
Showing/Hiding Scenes

When you are working on a production that has many scenes, you may not want to include them all in the rendered playback or in the export. Perhaps some of those scenes were just “working scenes” in which you were saving some rough animation.

You can use the Show/Hide buttons next to scene names in the Scene Manager window to hide scenes during the rendering process. This has the advantage over deleting scenes because the material remains with the animation set.

To show/hide scenes in your animation:

1. Click the **Show/Hide** button next to the scene name in the **Scene Manager** window.



When the Show/Hide button next to a scene name is empty, the scene will not appear in rendered animation.

See Also

Playback and Rendering on page 427
Deleting Scenes on page 46

Deleting Scenes

As you work on your animation project, you may want to remove old scenes from your project before you produce your final output.

For example, you could have a few test scenes where you wanted to try certain effects, but when you are ready to record your final movie, you'll want to remove these scenes from the animation set.

To delete a scene:

- Click **Delete**  in the **Scene Manager** window. **Toon Boom Studio™** deletes the scene folder and all its related animation files from your system.

See Also

Renaming Scenes on page 44

Adding Scenes to a Movie on page 41

Showing/Hiding Scenes on page 45

Setting up Your Studio Session

Toon Boom Studio™ is designed to be flexible enough to adapt to your computer setup as well as your personal flair, allowing you to customize your workspace.

You can customize the following aspects of your **Toon Boom Studio™** system:

- Toolbars
- Keyboard shortcuts
- Units of measure and default values in Sceneplanning Mode
- Display settings
- Default element colors
- Author and copyright owner of templates
- Background color of Drawing View and Camera View windows

See Also

Displaying Toolbars on page 47

Assigning Keyboard Shortcuts on page 48

Selecting the Units of Measure on page 50

Configuring Video Card Display Options on page 52

Defining the Default Tension, Continuity and Bias Values on page 283

Changing the Default Colors of Elements on page 384

Defining the Template Author and Copyright on page 426

Changing the Background Color of the Drawing and Camera View Windows on page 51

Displaying Toolbars

By default, **Toon Boom Studio™** displays specific toolbars in the main window, but you can select the toolbars to display in your **Toon Boom Studio™** session. You can then drag these toolbars to any position in your **Toon Boom Studio™** window.

To select the toolbars you want to display:

- Select the menus you want to display from the **View > Toolbars** menu. A check appears next to the toolbars that will display.
Depending on the mode you are in, you have the following choices:

- ⇒ **Main:** In Drawing Mode and Sceneplanning Mode, this toolbar allows you to start, open, or save animation sets, cut, copy, and paste content, and access the online help.
- ⇒ **Mode:** allows you to shift between Drawing Mode and Sceneplanning Mode.
- ⇒ **Interactive Playback:** In Drawing Mode and Sceneplanning Mode, this toolbar allows you to control the playback of your scene.
- ⇒ **Grid Control:** In Drawing Mode, this toolbar allows you to display grids in the Drawing View window.
- ⇒ **Onion Skin:** In Drawing Mode, this toolbars allows you to view the previous or next drawings in a sequence.
- ⇒ **Peg:** In Sceneplanning Mode this toolbar allows you to display/hide details about the peg path.
- ⇒ **Scene Operation:** In Sceneplanning Mode, this toolbar allows you to modify an elements’ position, motion path, size, and angle.
- ⇒ **Scene View:** In Sceneplanning Mode, this toolbar allows you to change what you see in the View windows.

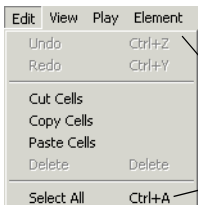
See Also

Assigning Keyboard Shortcuts on page 48
Setting up Your Studio Session on page 47

Assigning Keyboard Shortcuts

When you are working on your **Toon Boom Studio™** animation, there are many commands that you can access using either toolbar buttons or menu commands.

You can also access many of these commands using keyboard shortcuts. Many of these shortcuts appear next to the command in the menus.



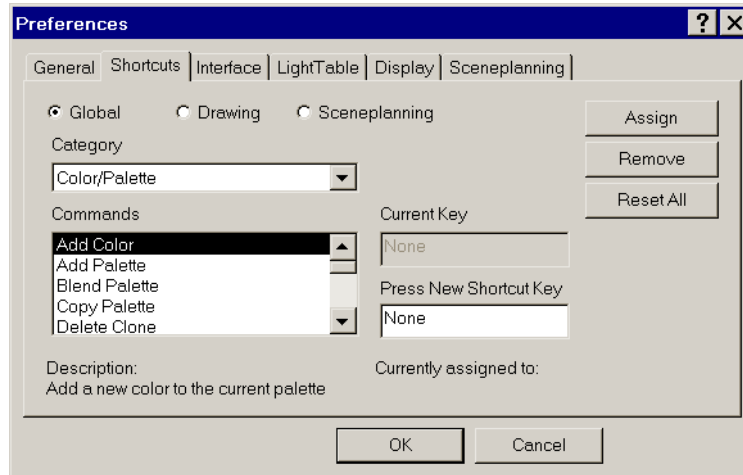
When you assign a keyboard shortcut to a command, it's keyboard combination appears next to the command in the menu.

You can create customized keyboard shortcuts for commands that do not have default shortcuts, such as those that are only accessible from right-click (contextual) menus.

You can also edit the default keyboard shortcuts assigned to commands to suit your particular working style.

To assign a command to a keyboard combination, follow these steps:

1. Select **Edit > Preferences**. The **Preferences** dialog box opens.
2. Click the **Shortcuts** tab.



3. Select the area that the command is located by clicking the button next to **Global**, **Drawing** or **Sceneplanning**.
4. Select the type of command you want to assign from the **Category** drop-list.
The contents of the **Commands** list changes depending on what you select from the **Category** drop-list.
5. Select the command you want to assign from the **Commands** list.
A description of the selected command appears in the **Description** panel. If the command you select already has a keyboard shortcut, the keyboard combination appears in the **Current key** and **Press new shortcut key** fields.
6. Click in the **Press New Shortcut Key** field and press the keys you want to assign to the currently selected command. The keys you press appear in the field.
7. Click **Assign** to assign the current key combination to the selected command.

If you want to remove the current keyboard combination, click **Remove**. The two fields revert to **None** to indicate that there are no keyboard shortcuts for the current command.

8. To reset all the keyboard shortcuts to their original shipped settings, click **Reset All**.

See Also

Displaying Toolbars on page 47

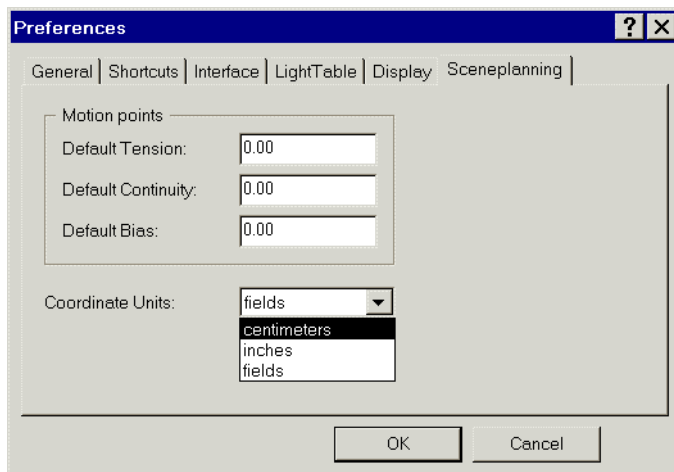
Setting up Your Studio Session on page 47

Selecting the Units of Measure

As you work on your scene objects in either Drawing Mode or Sceneplanning Mode, you can change their position or how they appear in your scene. To be able to measure the changes in size, rotation, or position, you need to use a system of measurement to make accurate modifications.

To select the measurement unit you want to use in your Toon Boom Studio™ session, follow these steps:

1. Select **Edit > Preferences**. The **Preferences** dialog box opens.
2. Select the **Sceneplanning** tab.



3. Select the unit of measure from the **Coordinates** drop-list. You have the following choices:

- **centimeters**: measures distance using the Metric system.
- **inches**: measures distance using the Imperial system.
- **fields**: measures distance using the traditional animation industry standard for the size of a film camera (0.5" X 0.375" at a ratio of 4:3).

By default, **Toon Boom Studio™** uses the traditional field system (measured by North/South/ East/West) to measure the distance, position, and size your elements.

4. Click **OK** when done or select another tab.

See Also

Basic Sceneplanning Concepts on page 238

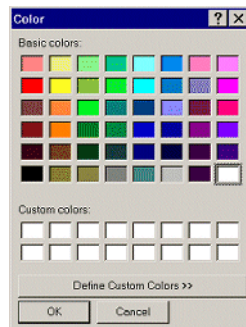
Setting up Your Studio Session on page 47

Changing the Background Color of the Drawing and Camera View Windows

You can set the background color for the Drawing View and Camera View windows to improve your ability to work on the drawing objects and lay out of your scene. The color you choose for the background is not exported as the background color of the scene.

To change the background color of the Drawing View and Camera View windows, follow these steps:

1. Select **Edit > Preferences**. The **Preferences** dialog box opens.
2. Click the **Interface** tab.
3. In the **Window background colors** panel, double-click the **Drawing/Camera** color square. The **Color** dialog box opens.



4. Select a color for the window color or create your own by clicking **Define Custom Colors**.
5. Click **OK** when you are done and **Toon Boom Studio™** will update the default background color of the windows.
6. To see the color you select in those windows, you must disable the **View > Show scene background color** option.

See Also

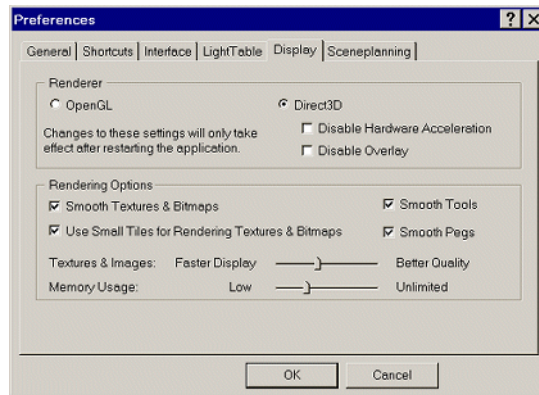
Changing the Background Color of a Scene on page 42
Setting up Your Studio Session on page 47

Configuring Video Card Display Options

If you are having problems with the display of **Toon Boom Studio™** windows or tools, you can use the options on the Display tab of the Preferences dialog box to set rendering options that will work with your video card.

To configure your display settings, follow these steps:

1. Select **Edit > Preferences**. The **Preferences** dialog box opens.
2. Click the **Display** tab, select your options, and click **OK** to close the dialog box.



- **Renderer:** By default **Toon Boom Studio™** is set to use **Direct3D** for rendering images in the View windows.
 - ⇒ **Disable Hardware Accelerator:** select this option if you are having problems with your display that you suspect might be related to features of your video card.

- ⇒ **Disable Overlay:** select this option if the drawing tools are responding very slowly.
- Rendering Options
 - ⇒ **Smooth Textures and Bitmaps:** select this option to anti-alias bitmap images and improve their appearance in the View windows.
 - ⇒ **Use Small Tiles for Rendering Textures and Bitmaps:** select this option if you are having problems displaying bitmaps and you suspect it might be due to the limitations of your video card.
 - ⇒ **Textures & Images:** use this slider to configure the quality and speed of the display of bitmap images in the View windows.
 - ⇒ **Memory Usage:** use this slider to control the amount of temporary memory used for storing drawings. Increasing the amount of memory allocated to the display of drawings will improve your performance because your processor will not have to reprocess the same images. However, this memory is taken from your RAM, so if you do not have a lot of RAM you may experience other performance reductions.
 - ⇒ **Smooth pegs:** select this option to anti-alias motion paths in the **View** windows in Sceneplanning Mode.
 - ⇒ **Smooth tools:** select this option to anti-alias the visual guides of the tools in the View windows. If you select this the circle guide will appear as a smoother circle instead of being jagged.

See Also

Displaying Toolbars on page 47
Selecting the Units of Measure on page 50
Setting up Your Studio Session on page 47
Changing Elements Over Time with Pegs on page 260

Chapter 2

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

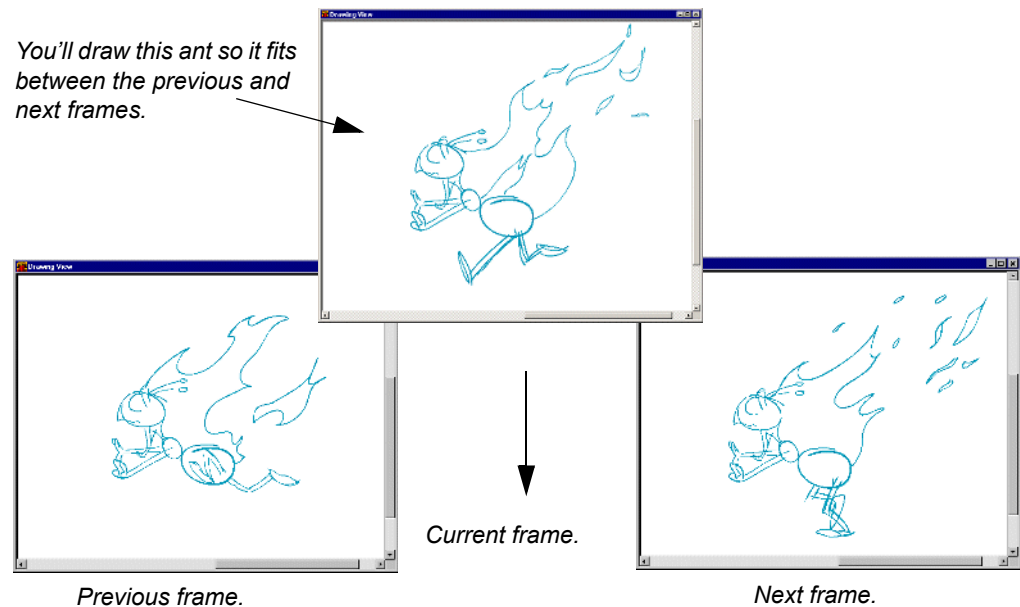
Lesson 1: Drawing

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:

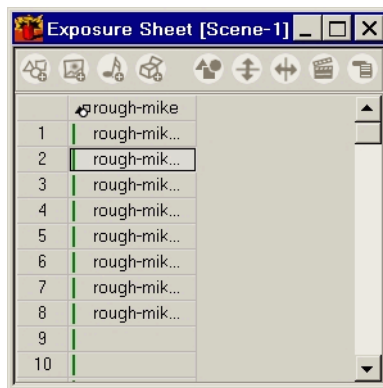
1. Open the **Drawing_Rough** animation set in the **Lesson1_Drawing** folder.
2. Save the animation in a location of your choice using **File > Save As**. Saving this animation set to a new location will ensure that you always have the original to return to and use should you want to.

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.

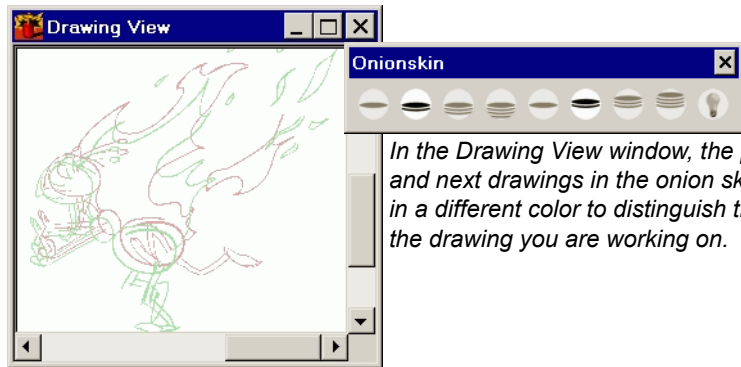
To draw Mike Ant's body, follow these steps:

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.




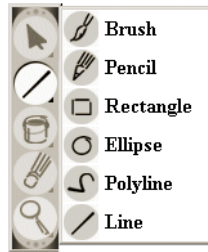
3. Set up the Drawing View window so that you have a clear view of Mike Ant.
 - To turn off the grid, press [G], the default keyboard shortcut.
 - To zoom-in, press [X], and to zoom-out press [Z].
 - To pan the Drawing View window, press and hold [Spacebar] and use the Grabber tool to change the part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

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



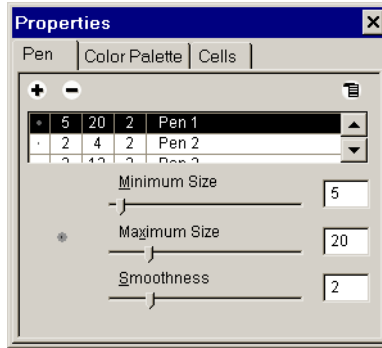
In the Drawing View window, the previous and next drawings in the onion skin appear in a different color to distinguish them from the drawing you are working on.

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

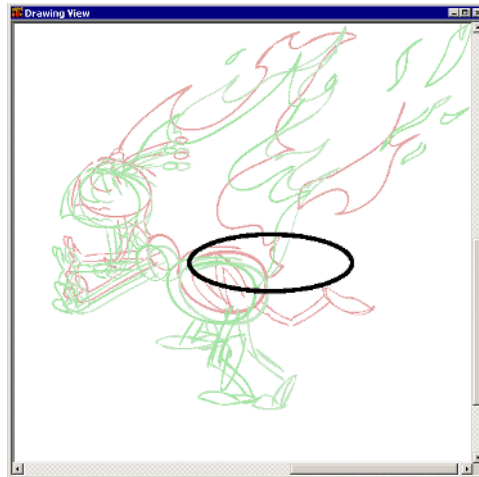


6. If the **Properties** window is not open, select **Window > Properties**. The **Properties** window appears.

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.

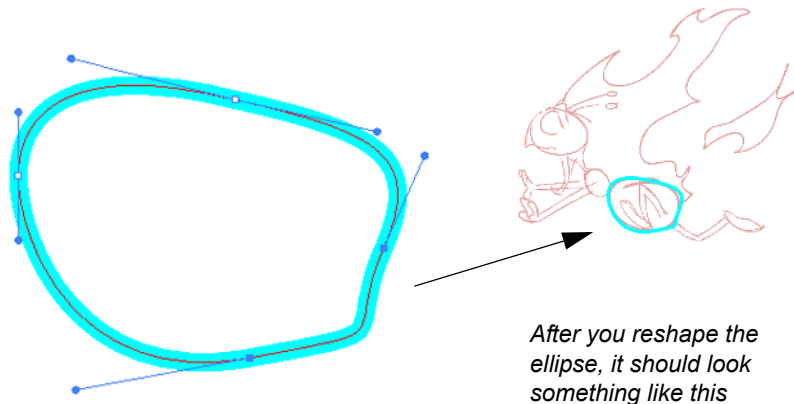
To reshape Mike Ant's body, follow these steps:

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.



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.

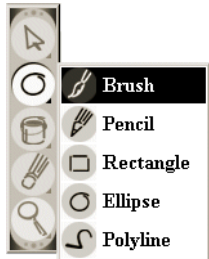
Unlike the Ellipse tool and other centerline tools (Rectangle, Polyline, Line and Pencil), the Brush tool creates variable-width strokes that respond to the pressure you apply with a digital pen and graphic tablet.

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.

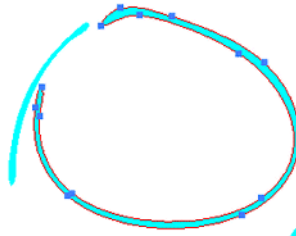
To draw Mike Ant with the Brush tool, follow these steps:

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

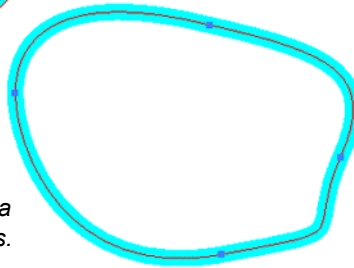


2. In the **Pen** tab, type 5 for the Minimum Size value. When you draw with a graphic tablet and pen, **Toon Boom Studio™** uses the Minimum Size and Maximum Size values to determine the width of the variable-width line.
3. In the Drawing View window, use the **Brush** tool draw a circle approximately 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.

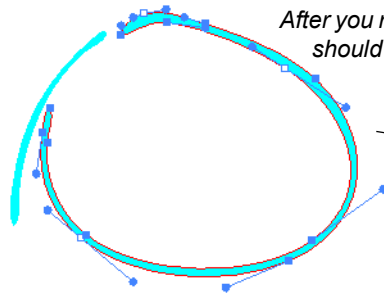


A brush stroke is surrounded by a collection of points. The outline of the brush stroke or painted fill is called a Contour.



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.

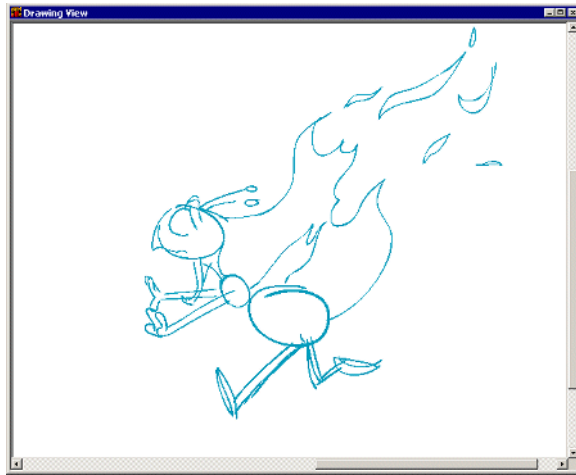


After you reshape the head drawing it should look something like this.



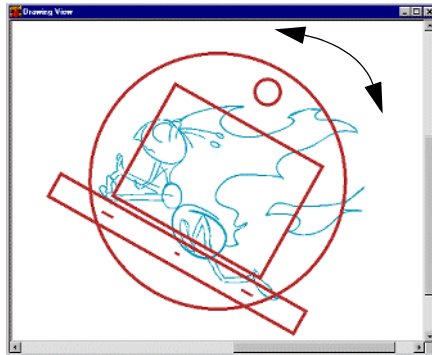
6. Draw the rest of the ant. The completed drawing must fit in run cycle, so you must draw Mike's legs so that his left leg is touching the ground and his right leg is bent at the knee. His body should also be slightly elevated, so you might want to move the body up slightly.

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.

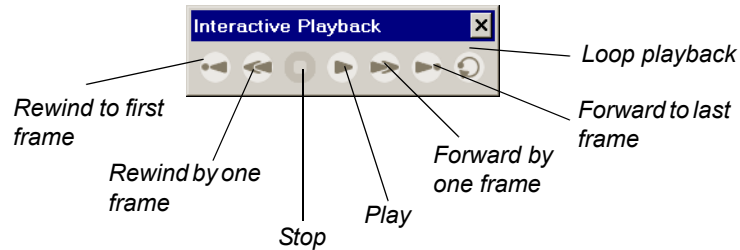
7. To help you with your drawing, you can use the **Rotary Light Table** so that you can get a better angle on the part of the drawing you are working on.
 - To display the **Rotary Light Table**, press [Ctrl]+[Alt] and use your mouse to freely rotate your drawing space.



- 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.

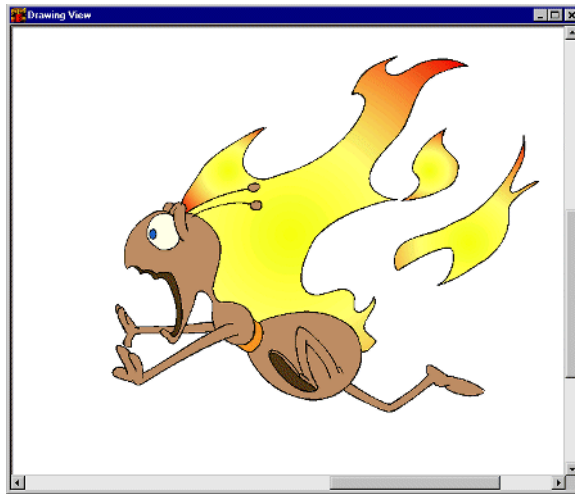
Lesson 2: Painting

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!

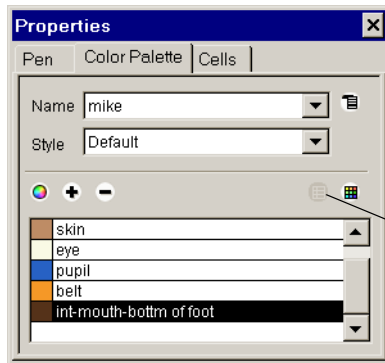
You're going to give Mike some color, as well as give him a real reason to run - red hot flames licking his back!

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.



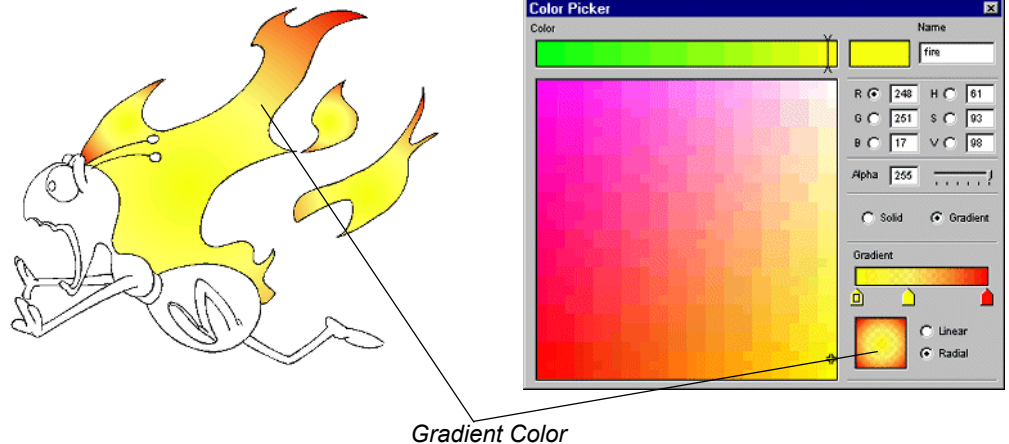
This color palette gives you all the color swatches you need to paint your ant

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.



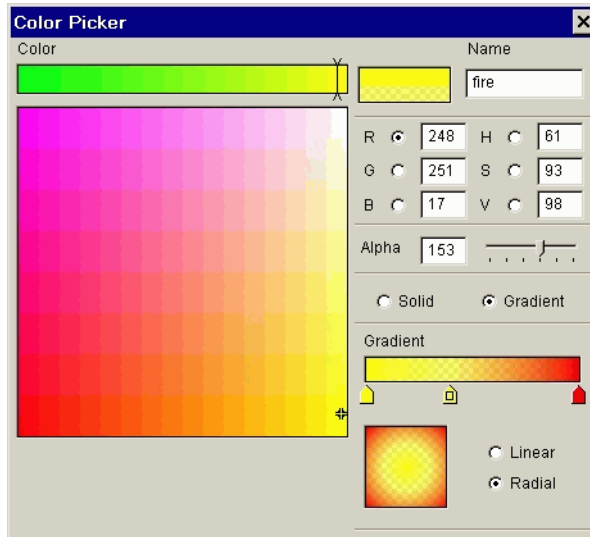
To create a gradient, follow these steps:

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.

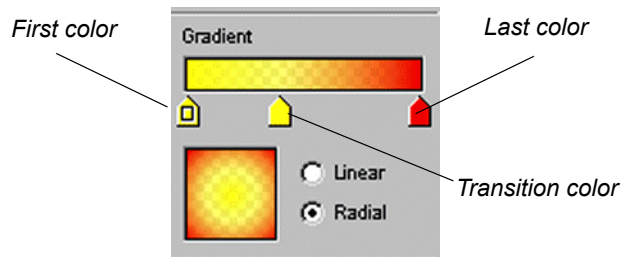
The **Color Picker** opens.

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.

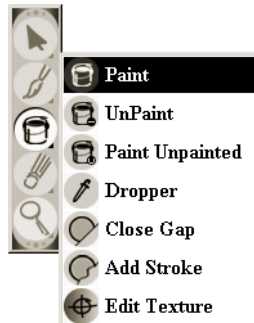
To paint the flame on Mike Ant's back, follow these steps:


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

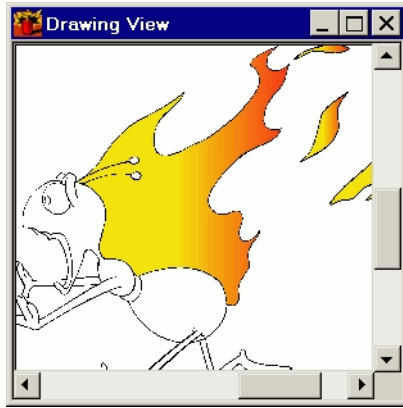


2. Set up the Drawing View window so that you have a clear view of Mike Ant.
 - To turn off the grid, press [G], the default keyboard shortcut.
 - To zoom-in, press [X], and to zoom-out press [Z].
 - To pan the Drawing View window, press and hold [Spacebar] and use the Grabber tool to change the part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

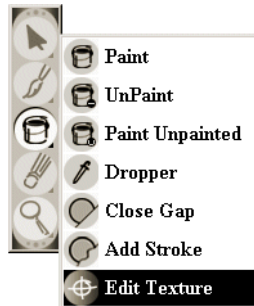
Step 4: Edit the Direction of the Flame

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.

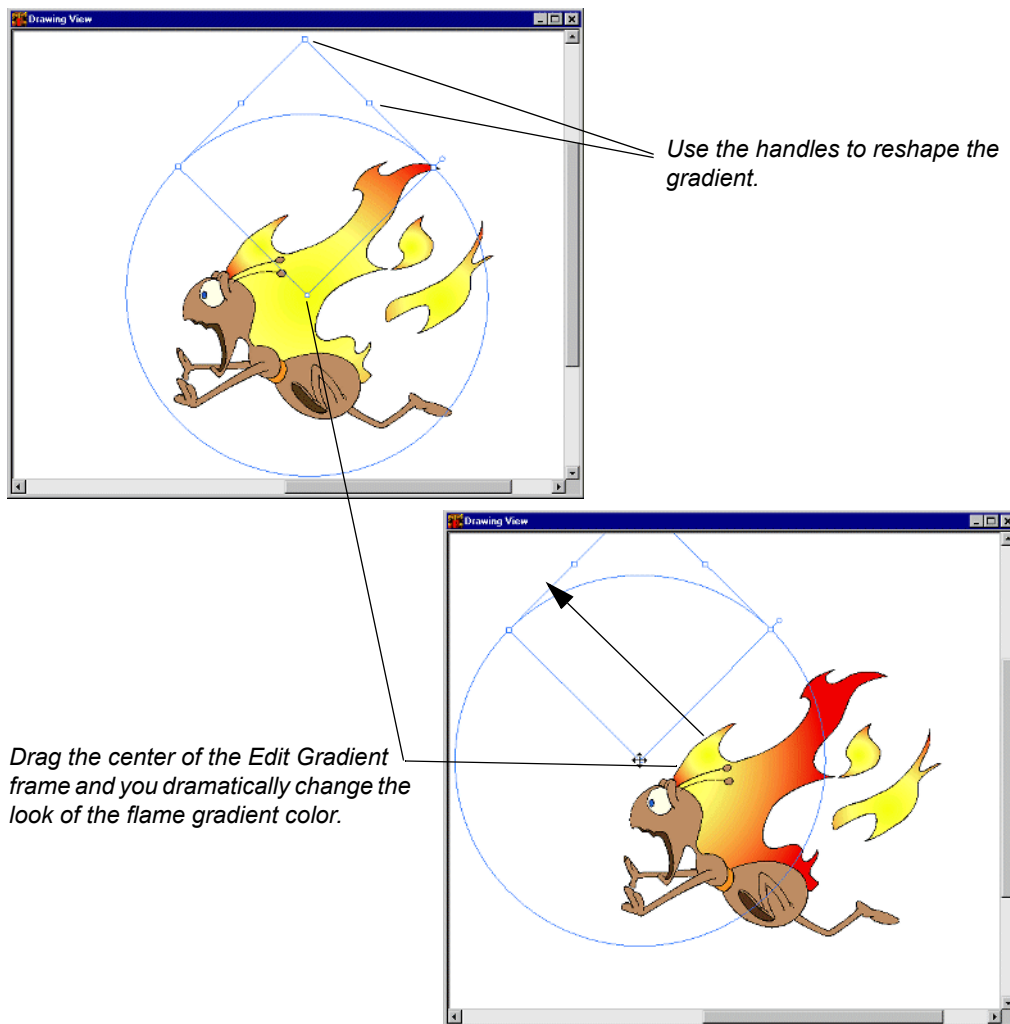
To edit the color gradient swatch, follow these steps:

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

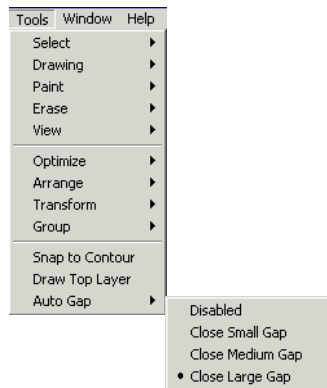
In this step, you are going to get to try out the powerful auto paint features.

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**.

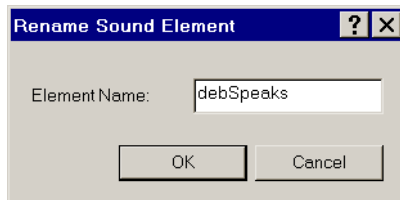
Step 1: Import Deb Ant's Voice Track

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.

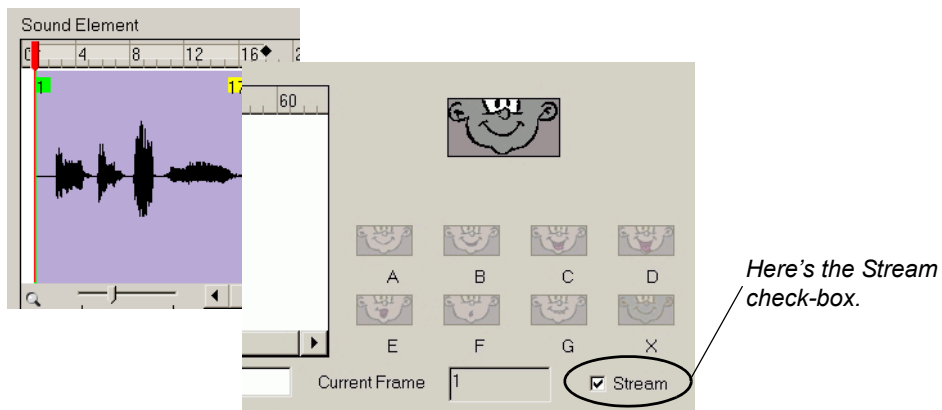
Step 2: Generate a Lip Chart for Deb Ant

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:

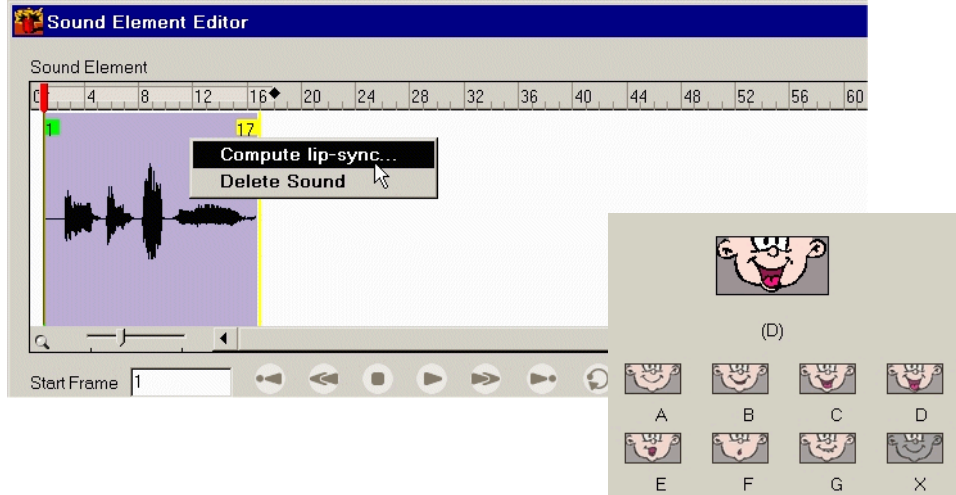
1. Select the **debSpeaks** element and select **Element > Edit Sound**. The **Sound Element Editor** appears.
2. In the **Sound Element** panel, click the wave form of the sound track and click the **Stream** button to set up this sound for streaming.

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.

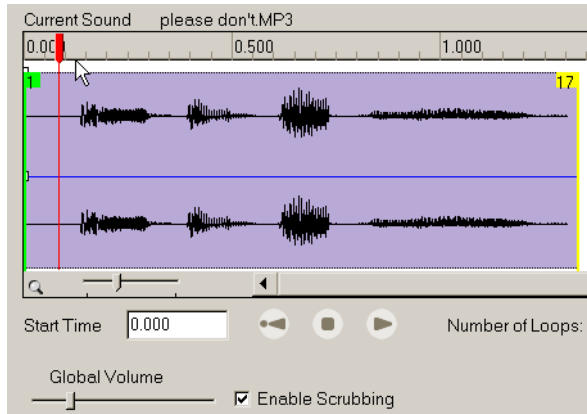


3. Right-click the waveform in the **Sound Element** panel and select **Compute Lip Sync**. A progress bar appears as **Toon Boom Studio™** analyzes the selected sound clips and assigns a lip sync letter to each frame.

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”.



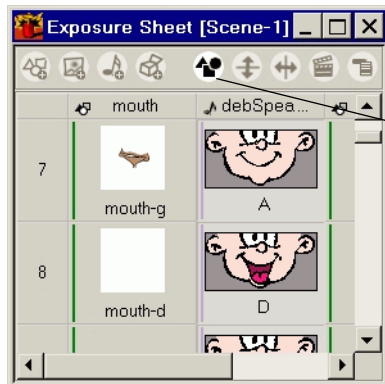
6. Click **OK** to close the **Sound Element Editor** and then save your animation set.

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.

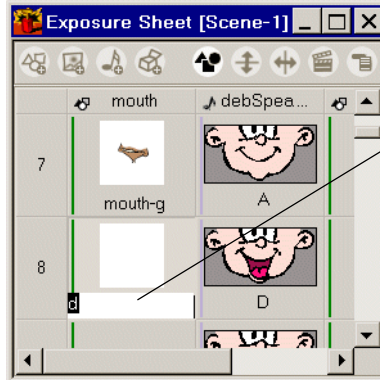
To draw Deb Ant's missing lips, follow these steps:

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.



Cell labels link the contents of the cell to a file in your animation set folder.

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.

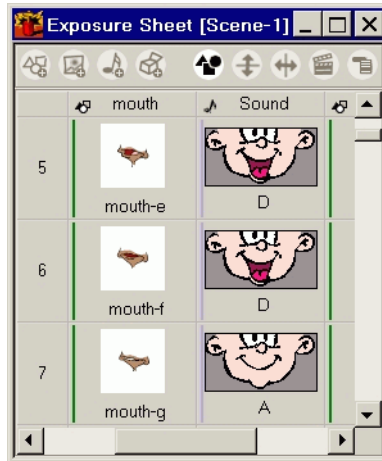
In **Lip Sync Mapping** dialog box, you identify each phoneme drawing for a character and then **Toon Boom Studio™** automatically labels all of the cells in the character's element with the appropriate label for each phoneme drawing.

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.

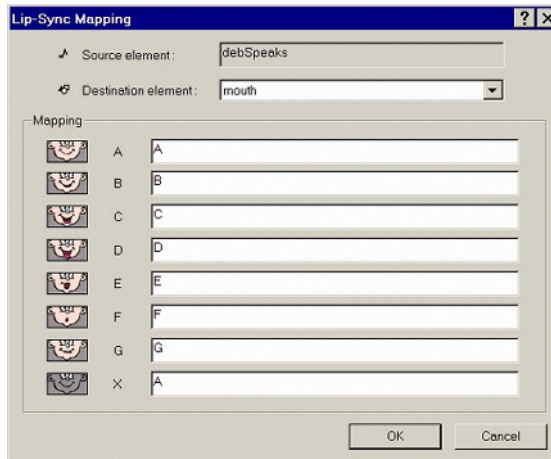
In the mouth element, we have already named all the elements with the letters of the seven plus one phonemes. All you have to do is map the drawings to the phonemes in this element, and **Toon Boom Studio™** will do the rest of the work for you.

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.

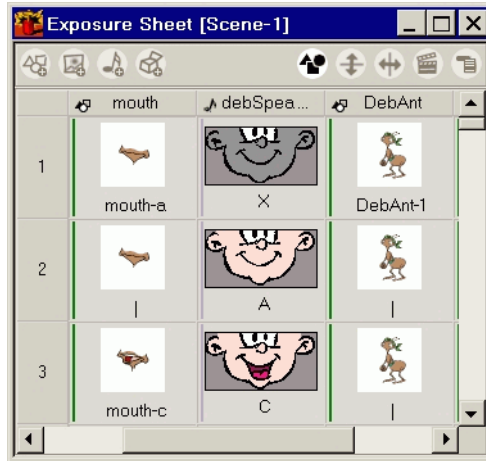


2. Right-click the title of the debSpeaks element and select **Modify Lip Sync Mapping** from the pop-up menu. The **Lip Sync Mapping** dialog box opens.



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.

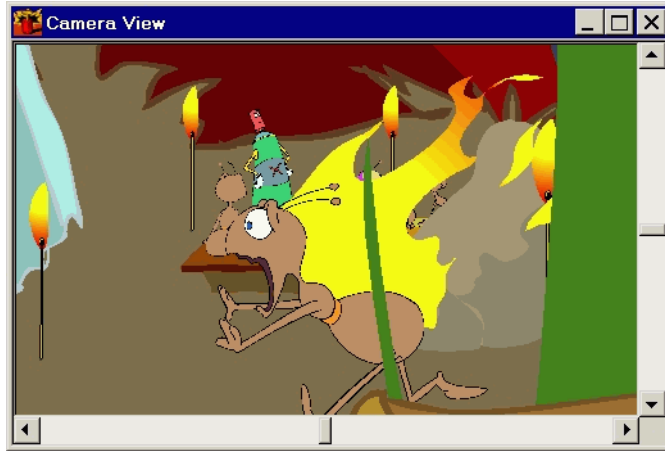
4. Select **Drawing Mode Current Scene** from the **Export Type** panel and leave the rest of the settings as default.
5. Click **OK** to begin the exporting process. A progress bar appears to show you the progress of the export.

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.

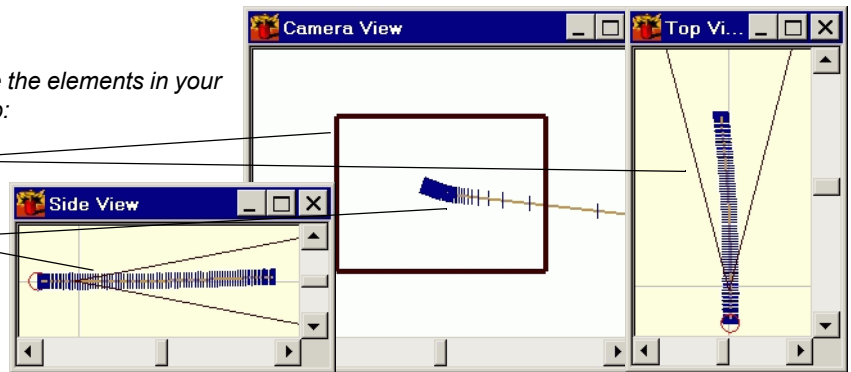
The idea of **Toon Boom Studio™**'s digital peg system was inspired by traditional 2D cel animation. In traditional animation, cycles of animation are typically drawn in-place. To make characters move through the cycle, animators would use peg bars, which would ensure that the drawings changed position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

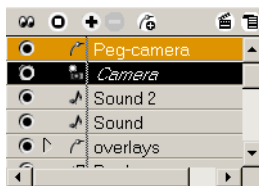
- Here's the camera
- Here's a motion path we created with a peg



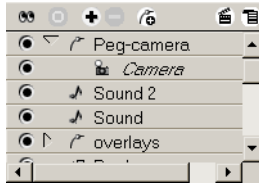
For this step, we've already created the motion path that the camera will follow. All you have to do is attach the camera to the peg.

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**.

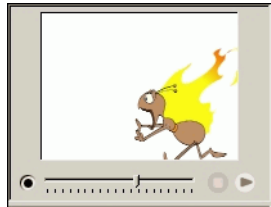
2. Select **Window > Library** to open the **Library** window. The **Library** window is your center for **Toon Boom Studio™** content management.

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.

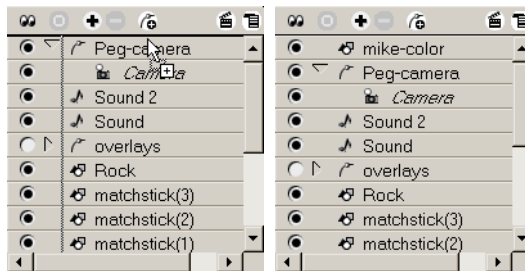


3. Open the **Local** folder, double-click the **mikeAnt.tbt** file and press the **Play** button in the preview panel. Watch as the Mike Ant runs in-place, flames scorching his back (poor Mike!).



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.



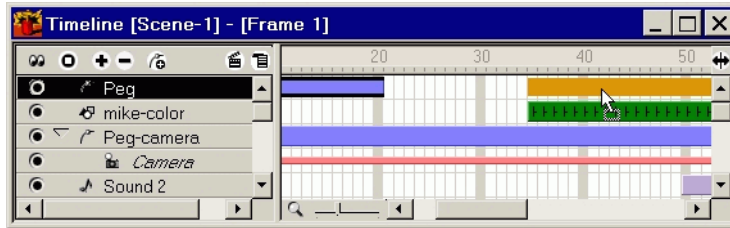
5. Save your animation set and move on to the next step, where you will make Mike Ant move as he runs.

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

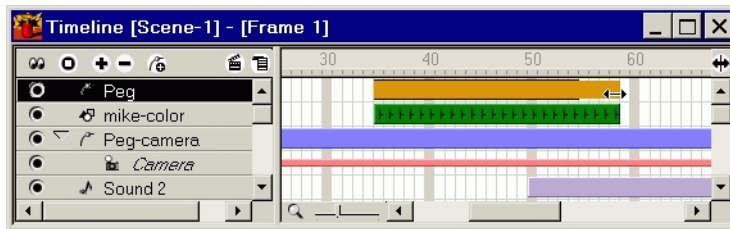
This is the first step to creating a motion path for Mike Ant.

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.

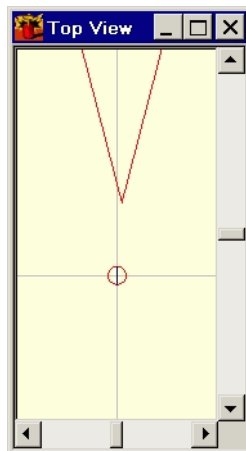
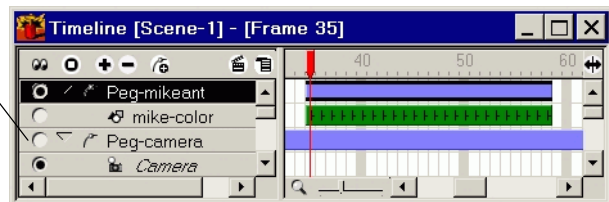
You will use the three View windows to design and playback your motion effect.

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.

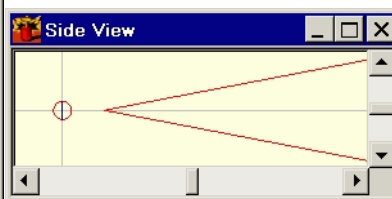
Use the Show/Hide buttons to display the elements



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

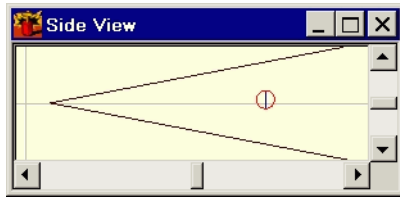
You may have to zoom and pan your windows to get the same views of these windows.

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

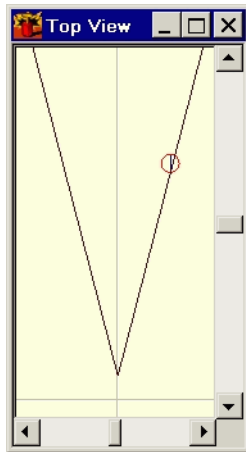


- To zoom-in, press [X].
- To zoom-out, press [Z].
- To reset the view, press [Shift]+[V].

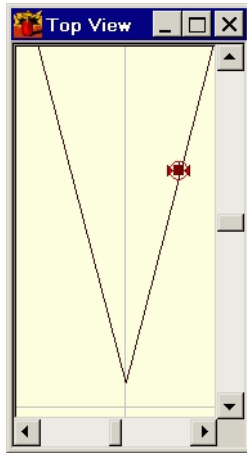
3. With the **Select** tool, move the red circle of the peg in the **Top View** and **Side View** windows.
- In the **Side View** window, move the peg so that it is just above the line that marks the division between north/south and place it further back in the scene.



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



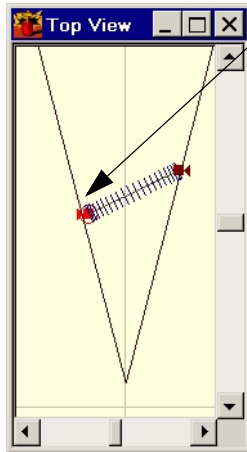
4. Make sure you have the Peg element selected in the **Timeline** window and select **Tools > Motion** to activate the **Motion** tool.



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.

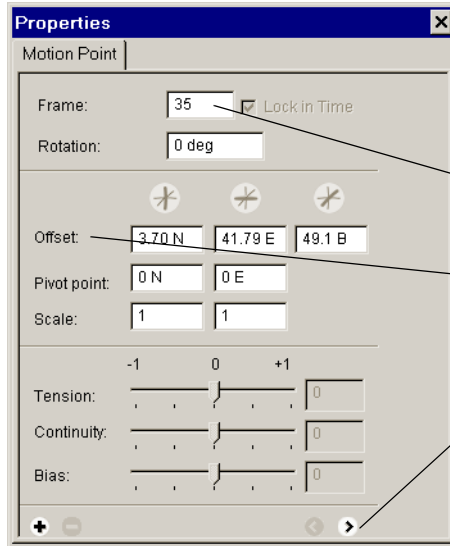
5. With the **Motion** tool in the **Top View** window, drag the last key frame on the motion (which is on the left) path towards the west side of the camera frame and towards the front.



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



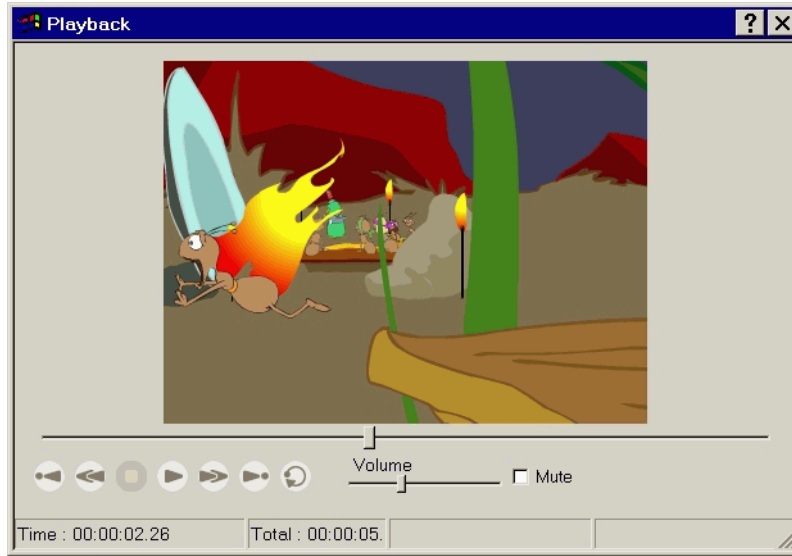
The Frame field identifies the frame number of the selected motion point.

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

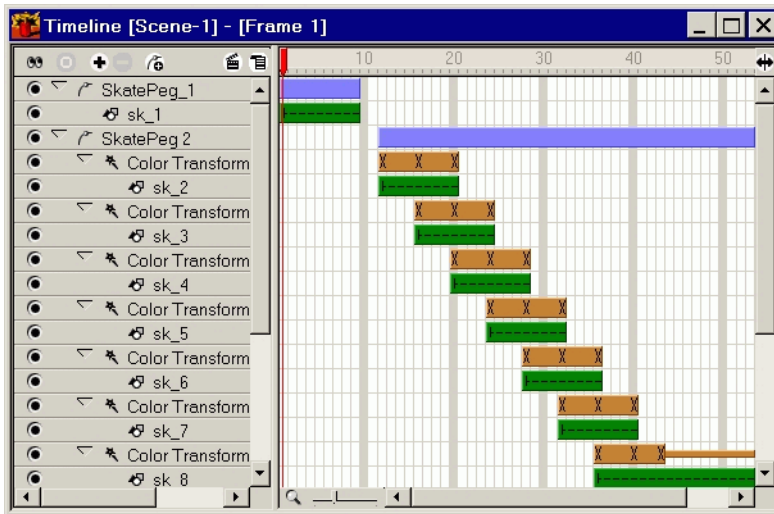
One of the new additions to **V2** is the **Color Transform** element, which you can use to change the color properties of an element over time.

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.

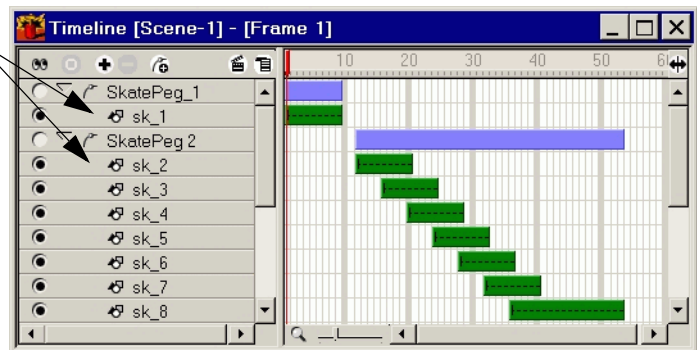
Notice how two images of the skater appear to overlap for several frames? Well, in this lesson, you are going to make the overlapping images fade-in/out to create a series of cross-dissolves (chain mix).

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.

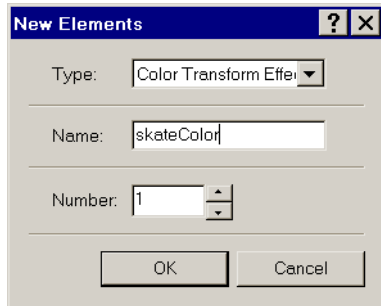
During the cross-dissolve you will create, two drawings will appear at the same time, one fades-in while the other fade-out. To achieve this effect, we placed each drawing in a separate element layer so that you can control them independently. You'll see as we progress through the lesson how this enables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

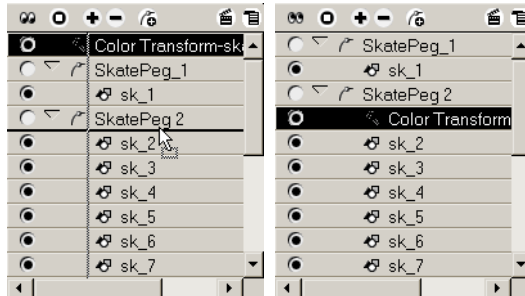


To add the first color transform element, follow these steps:

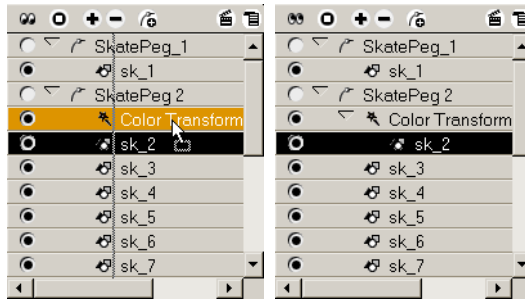
1. Click the **Add +** button at the top of the Timeline window. The New Elements dialog box opens.



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.

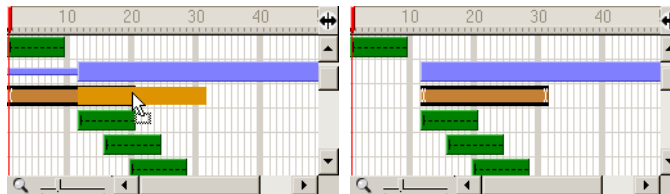


4. Attach the **sk_2** element to the **Transform-skateColor** element by dragging and dropping it on top of the effects element.

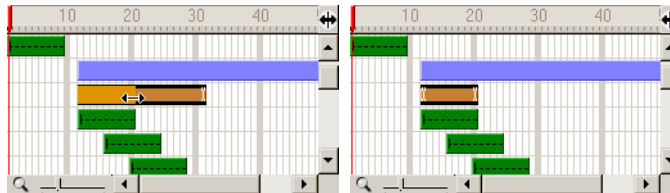


5. Change the start and duration of the **Transform-skateColor** element so that it matches the start and duration of the **sk_2** element.

- 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.

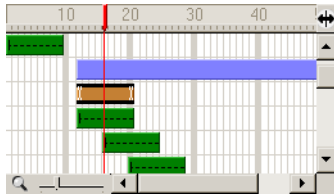
- In additive color transformations, you select a color value that is added to all of the color values in an element.
- In multiplicative color transformations, you select a value (usually between 0 and 1) and multiply this value with all of the color values in an element to arrive at a final value.

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.

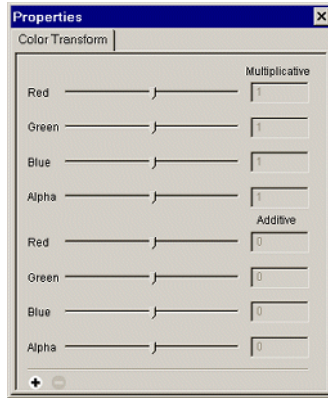
To make an element change from transparent to opaque to transparent, you must multiply the alpha values by 0, 1, and 0. When you multiply an opaque color (255 alpha) by 0, the result is 0 which makes the color transparent.

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

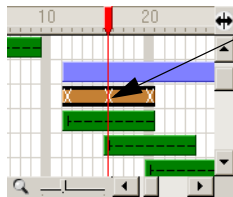
1. Advance the red frame at the top of the Timeline window to frame 16.



- 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.

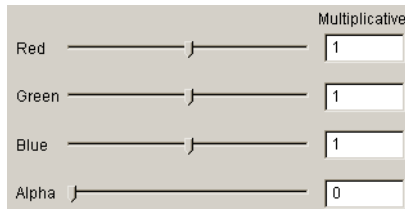


- In the Color Transform tab, click the **Add +** button to add a key frame to the selected frame on the **Transform-skateColor** element.



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.

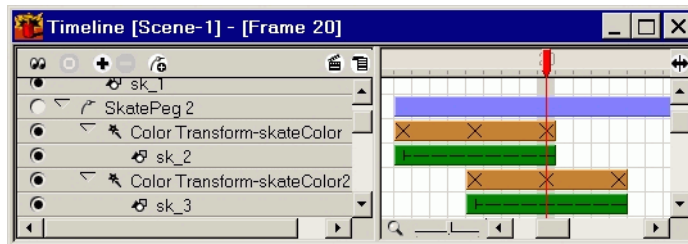
Step 3: Create the Next Color Transform Effect

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

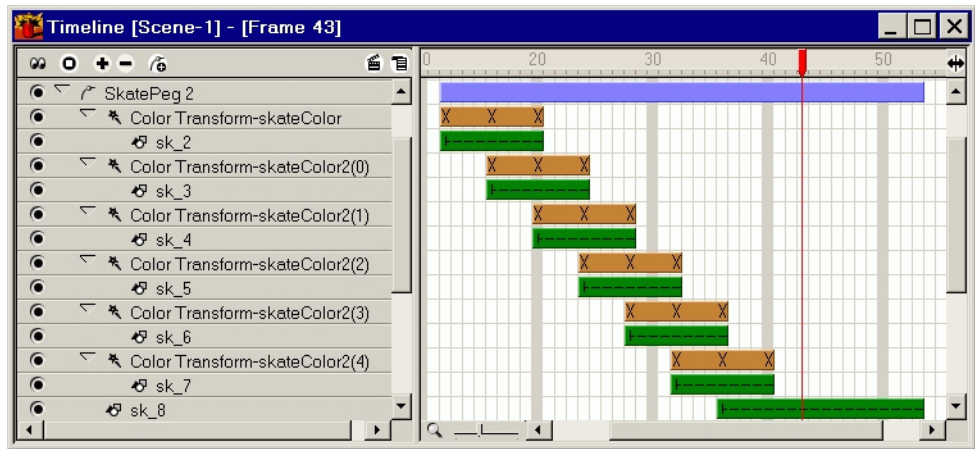
All of the remaining elements, except for the last, must undergo the same color transform effect as you created in Step 3. Rather than duplicating your efforts, you can just clone the Color Transform element and attach the other elements to it.

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.

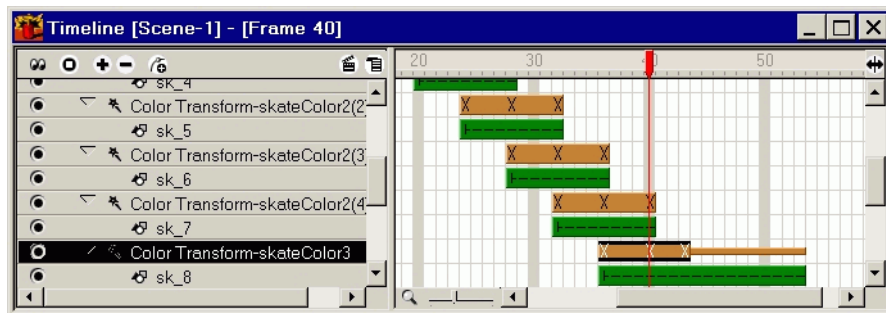
For the last color transform effect, the skater will start out transparent, become fully opaque and remain opaque for the rest of the scene.

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.

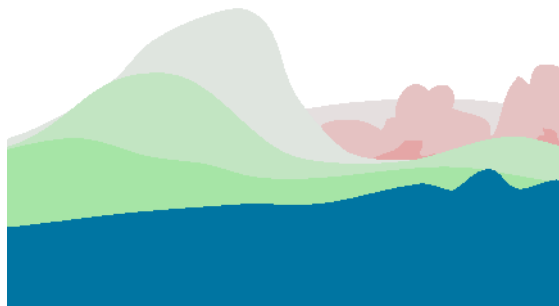
Step 1: Drawing the Mask

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.

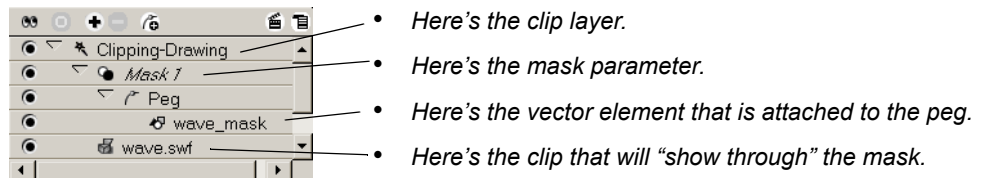
Step 2: Building the Clipping Element

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.

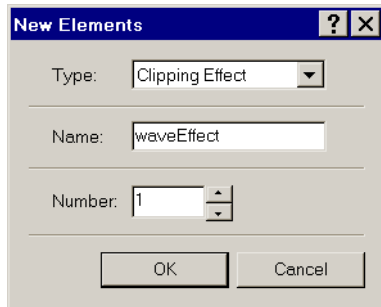
You will notice in our setup, that we have attached the wave_mask vector element to a peg, that moves the wave in the scene.



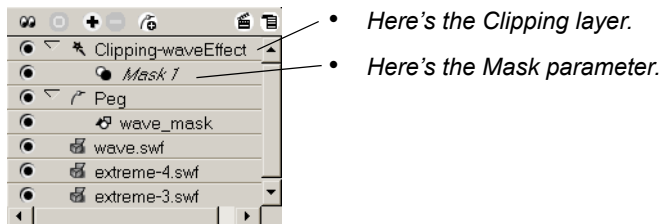
To build the mask element, follow these steps:

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.

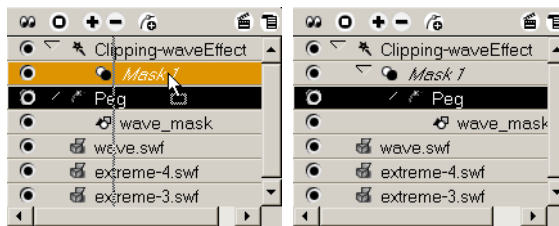
3. Click the **Add +** button at the top of the Timeline window. The New Elements dialog box opens.
4. From the **Type** drop-list, select **Clipping Effect**, type *waveEffect* in the name field and click **OK**.



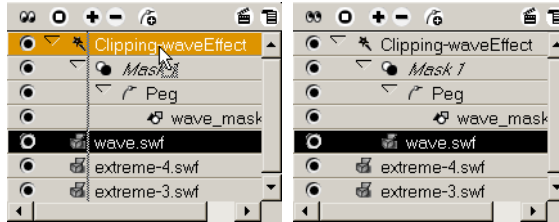
The **Timeline** window will look like this:



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!

Chapter 3

Drawing

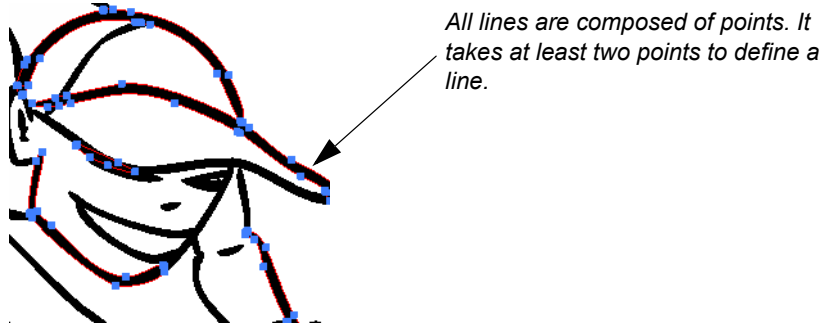
This chapter explains how to use the tools in **Toon Boom Studio™** to create your own animated drawings.

This chapter includes the following topics:







- Drawing Line Art on page 114
- Working with Selections on page 121
- Optimizing Drawing Objects for the Web on page 131
- Cutting and Erasing Parts of Drawing Objects on page 139
- Modifying the Shape of Vector Lines on page 142
- Setting Up Your Pens on page 150
- Setting Up Your Drawing Space on page 153

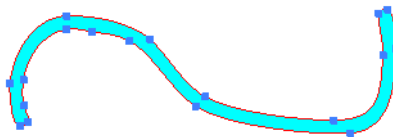
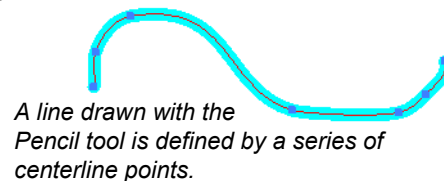
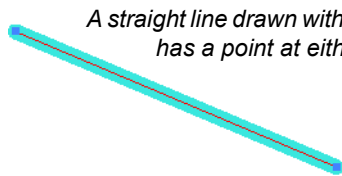
Drawing Line Art

Lines (also called “line art”) are the basis for all shapes that you draw with **Toon Boom Studio™** vector drawing tools. As lines are the basis of all shapes, points are the basis of all lines.



Points can run down the center of a line, creating what we call a centerline. Or, points can run around the outside of a shape, creating a line called a contour.


- The Line , Polyline , Pencil , Rectangle  and Ellipse  tools create centerline shapes of a set width.
- The Brush  tool creates variable-width strokes that respond to the pressure you apply with a digital pen and graphic tablet. The points that compose a brush stroke surround a zone that is filled with color, creating a contour.



The tool you select depends on the type of effect you want to create as well as considerations for the file size of your final animation.

To draw your line art, you must be in Drawing Mode.

To switch to Drawing Mode:

- Click the **Drawing Mode**  button or select **View > Drawing Mode**.
If you are already in **Drawing Mode**, the command in the **View** menu reads as **Sceneplanning Mode**.



- When you draw your characters, you may want to wait to draw the lip positions until after you import the sound track.

Toon Boom Studio™ features a powerful lip sync generator. With this tool, you can generate a lip chart that identifies the animation phoneme that matches each frame. You can use the lip chart as a reference while you draw the lip positions of your characters.

- The features of Sceneplanning Mode may change how you approach drawing in Drawing Mode.

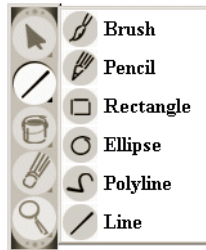
In Sceneplanning Mode, you can create motion, scale and rotation changes over time. Therefore, you do not have to animate these changes in your drawing objects in Drawing Mode.

See Also

Drawing Straight Lines, Ellipses and Rectangles on page 116
Drawing Brush Strokes on page 118
Drawing Pencil Lines on page 120
Drawing with the Polyline Tool on page 117
Creating Lip Charts Automatically on page 230
Modifying the Shape of Vector Lines on page 142
Optimizing Drawing Objects for the Web on page 131
Exposure Sheet and Timeline Windows on page 354
Protecting Drawings on page 398

Drawing Straight Lines, Ellipses and Rectangles




The drawing tools in **Toon Boom Studio™** resemble standard drawing tools used in many graphic programs, including a few extras made special for animators. You can use your mouse or graphic tablet to draw your shapes.



When you click and hold the drawing tool button on the Tools Palette, you can select the drawing tool you want to use from the pop-up menu.

The active drawing tool appears in the second button of the Tools Palette. You can press [2] to cycle through the tools in the drawing pop-up menu.


To draw straight lines, ellipses and rectangles, follow these steps:

1. Select the tool you want to use from the **Tools > Drawing** menu or the **Tools Palette**. You have the following choices:
 - **Line**  tool: draws straight lines. To draw at 15 degree angles, press [Shift].
 - **Rectangle**  tool: draws rectangular or square shapes. To draw a square, press [Shift] as you drag the **Rectangle** tool.
 - **Ellipse**  tool: draws round shapes. To draw a circle, press [Shift] as you drag the **Ellipse** tool.
2. Select a pen style from the **Pen** tab. The width of your line is based on the Maximum Size value of the pen you select.
3. Select a solid color swatch from the **Color Palette** tab. You cannot use a gradient or texture color swatch.
4. Drag the tool in the Drawing View window until you have the shape you want.
 - With the Rectangle and Ellipse tool, press [Alt] to draw from the center.
 - With the Line tool, press [Alt] to draw from the previous point.
 - Press [Ctrl] to select the object you just drew and move, resize, or rotate it.

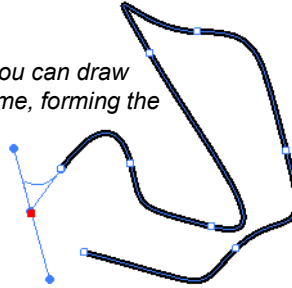
See Also

Drawing with the Polyline Tool on page 117
Working with Selections on page 121
Setting Up Your Pens on page 150


Drawing with the Polyline Tool

The Polyline  tool is great for drawing vector shapes that consist of many continuous points that form different angles. As you draw with the Polyline tool, you can be sure to close your line art so that you can fill it with color without having to worry about gap closing.

With the Polyline tool, you can draw shapes one point at a time, forming the shape as you go.



To draw a shape with the Polyline tool, follow these steps:


1. From the **Tools > Drawing** menu or **Tools Palette**, select the **Polyline**  tool.
2. Select a pen style from the **Pen** tab. The width of your line is based on the Maximum Size value of the pen you select.
3. Select a solid color swatch from the **Color Palette** tab. You cannot use a gradient or texture color swatch to draw with the **Polyline** tool.
4. Click to add points to the line you draw.
5. After you add a point, keep the pointer button pressed, and shape the line using the handles.
 - Press [Shift] to move the handles at 15 degree increments.
 - Press [Alt] to detach the motion of one handle from the other.
6. To close a shape so that there are no gaps:
 - Place your pointer over a point and click. A plus [+] sign appears when you are adding a point that will close a shape.
 - Place your pointer over any location on the shape you are drawing and click. An "o" [o] appears when your pointer is over a spot that **Toon Boom Studio™** can use to create a closed shape.

7. To remove a point on the line, press [Shift] and click the point. **Toon Boom Studio™** recalculates the shape with the point removed.

See Also

Setting Up Your Pens on page 150
Drawing Straight Lines, Ellipses and Rectangles on page 116
Working with Selections on page 121
Modifying the Shape of Vector Lines on page 142
Sequencing Element Contents on page 386
Protecting Drawings on page 398

Drawing Brush Strokes

When you draw with the Brush  tool and a graphic tablet and pen, you can enjoy the effect of drawing as if you are working with pen and paper and the width of your stroke can change depending on the amount of pressure you apply.

Although strokes created by the Brush tool are more natural looking, they require more memory to store than shapes drawn with the centerline tools Ellipse, Rectangle, Pencil and Polyline.

See how the line in the drawing varies just slightly throughout this drawing?

The variable-width brush stroke creates a neat look in your drawings.



To draw a brush stroke, follow these steps:

1. From the **Tools > Drawing** menu or **Tools Palette**, select the **Brush** tool.
2. Select a pen style from the **Pen** tab.

If you are using a graphic tablet and pen, the width of the line you draw depends on the pressure you apply and the Minimum and Maximum size settings on the Pen tab.

3. Select a color for your line art from the swatches in **Color Palette** tab. You can select either a solid, gradient or texture swatch when you use the **Brush** tool.
4. Draw your line using your mouse or pen and graphic tablet.



You can force **Toon Boom Studio™** to connect all overlapping shapes that you draw.

- Select **Tools > Draw Top Layer**. When this command is active, **Toon Boom Studio™** creates one object out of overlapping lines.

As you draw with the Brush tool, the Draw Top Layer command will create one shape out of numerous lines you may create as you draw with a graphic tablet and pen.

See Also

Setting Up Your Pens on page 150

Drawing Straight Lines, Ellipses and Rectangles on page 116



Working with Selections on page 121

Optimizing Drawing Objects for the Web on page 131

Modifying the Shape of Vector Lines on page 142

Exposure Sheet and Timeline Windows on page 354

Drawing Pencil Lines

You can use the Pencil  tool to draw as you would with an ordinary pencil. The Pencil tool creates a single-width centerline shape, unlike the Brush  tool.

To draw pencil lines, follow these steps:

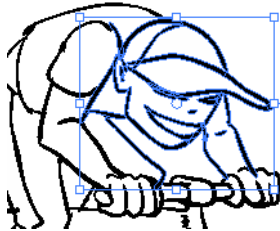
1. From the **Tools > Drawing** menu or **Tools Palette**, select the **Pencil** tool.
2. Select a pen style from the **Pen** tab. The width of your line is based on the Maximum Size value of the pen you select.
3. Select a solid color swatch from the **Color Palette** tab. You cannot use a gradient color swatch to draw a pencil line.
4. Draw your line using your mouse or pen and graphic tablet.

See Also

Setting Up Your Pens on page 150
Drawing Straight Lines, Ellipses and Rectangles on page 116
Drawing Brush Strokes on page 118
Drawing Brush Strokes on page 118
Working with Selections on page 121
Optimizing Drawing Objects for the Web on page 131
Modifying the Shape of Vector Lines on page 142

Working with Selections


You can select and modify any drawing object. When you select a drawing object, a bounding box appears around it and you can then change its properties (color, shape, angle) or its location in the drawing space.



If you press the [Shift] key, you can select more segments and add them to what you've already selected.

You can change an object's properties interactively by either moving the object in the Drawing View window or by changing its properties in the Properties window.


There are several ways to select the objects in your Drawing View window:

- To select all the objects, select **Edit > Select All**.
- To select one or more objects, click the **Select**  tool and use one of these methods:
 - ⇒ Click the object you want to select. To select more than one object, press [Shift] and click the objects you want to select.
 - ⇒ Drag the **Select** tool over each object (drawing a selection square across each object).
 - ⇒ Press [Alt] and drag the lasso around or through each object you want to select.



When you select drawing objects, you can copy them by pressing [Ctrl] and dragging the selection away from its original position.

To deselect the objects in the Drawing View window, you have two choices:

- To deselect an object without deselecting the others, press [Shift] and click on the objects you don't want.
- To deselect them all, you can select **Edit > Deselect All**, click the **Select**  tool in an empty space in the **Drawing View** window, or press [Esc].

See Also

Ordering Drawing Objects on page 123

Resizing, Flipping, Rotating and Moving Drawing Objects on page 124

Cutting, Copying, and Pasting Drawing Objects on page 127

Deforming a Drawing Object on page 128

Exposure Sheet and Timeline Windows on page 354

Grouping Drawing Objects

Grouping drawing objects will help you transform and deform multiple objects as one.

To group drawing objects, follow these steps:

1. Select the drawing objects you want to group.
2. Select **Tools > Group > Group**.

To ungroup drawing objects, follow these steps:

1. Select the grouped drawing object.
2. Select **Tools > Ungroup**.

See Also

Ordering Drawing Objects on page 123

Resizing, Flipping, Rotating and Moving Drawing Objects on page 124

Cutting, Copying, and Pasting Drawing Objects on page 127

Deforming a Drawing Object on page 128

Ordering Drawing Objects

The order that you draw objects determines their stacking order in the Drawing View window. Drawing objects that are drawn last appear on top of drawing objects drawn earlier.

The splotch on the top (3) was drawn last, and the splotch on the bottom (1) was drawn first.

These drawing objects will always appear in this layering order unless you change them.



To change the layering order of drawing objects, follow these steps:

1. Select the drawing object that you want to reorder.
2. From the **Tools > Arrange** menu, select one of the following commands:
 - **Bring to Front:** moves the currently selected drawing objects on top of all other objects in the drawing.
 - **Bring Forward:** moves the currently selected drawing objects forward in the layering order.
 - **Send to Back:** moves the currently selected drawing objects behind all other objects in the drawing.
 - **Send Backward:** moves the currently selected drawing objects back one in the layering order of the drawing.



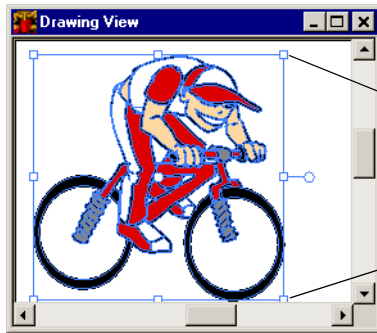
If you are drawing with the Brush tool with the **Tools > Draw Top Layer** option enabled, drawing objects are merged to one layer.

See Also

Resizing, Flipping, Rotating and Moving Drawing Objects on page 124
 Cutting, Copying, and Pasting Drawing Objects on page 127
 Deforming a Drawing Object on page 128
 Merging Layers Using Draw Top Layer on page 138

Resizing, Flipping, Rotating and Moving Drawing Objects






When you select one or more objects in the Drawing View window, a bounding box appears around the selected objects. If you take a close look at the bounding box, you'll notice that there are small boxes in each corner, in the center of each side, and on the right side of the bounding box. These boxes are called *handles*.



One drawing can be made up of many individual lines, but when you select more than one, one bounding box appears for all the selected lines.

Handles

Depending on the handle you select, you can make different types of changes to the selected object. When you pass your pointer over a handle or over the object, the pointer changes to indicate the type of change you can make.

- **Move** : changes the current position of the selected lines/shapes. To nudge selected objects, you can also use the arrow keys. Press [Shift] if you want to move the object in larger increments.
- **Resize Sides** : changes the width of the selected lines/shapes.
- **Resize Top/Bottom** : changes the height of the selected lines/shapes.
- **Resize Height/Width** : changes the height and width of the selected lines/shapes. Press [Shift], and the shape will resize proportionally.
- **Rotate** : changes the angle of the selected lines/shapes.

If you drag a handle beyond its opposing handle on the bounding box, you will flip the drawing object either horizontally, vertically, or diagonally.

You can also use the following commands in the **Tools > Transform** menu to flip and rotate your drawing objects:

- **Flip Horizontal**: swaps the left and right side of the image.
- **Flip Vertical**: swaps the top and bottom of the image.

- **Rotate 90° CW:** turns the drawing 90 degrees to the right (clockwise).
- **Rotate 90° CCW:** turns the drawing 90 degrees to the left (counter-clockwise).
- **Rotate 180°:** rotates the image 180 degrees.

See Also

Grouping Drawing Objects on page 122

Ordering Drawing Objects on page 123

Cutting, Copying, and Pasting Drawing Objects on page 127

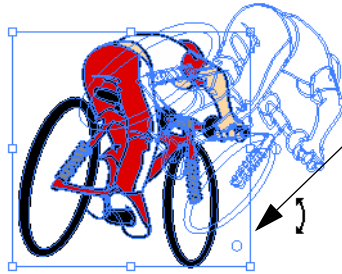
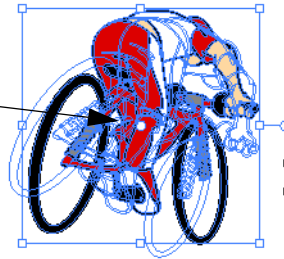
Deforming a Drawing Object on page 128

Protecting Drawings on page 398

Changing the Center of Transformation


You can change the center of the rotation and scaling effects. This might come in handy if you want to rotate or scale a drawing from a corner, rather than from the center.

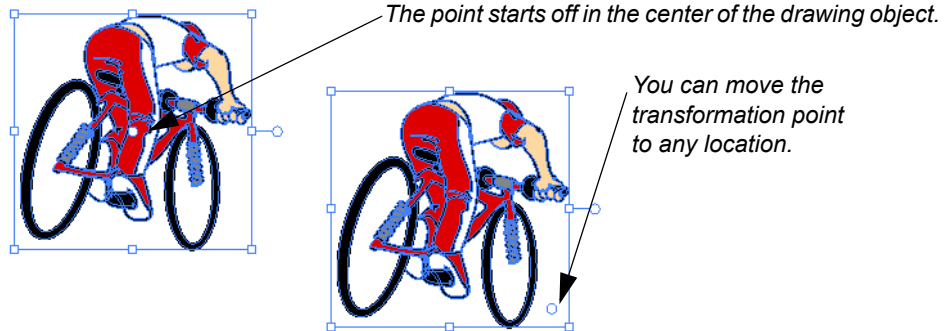
We rotated this drawing on the original point in the center of the bounding box.



We moved the transformation point to the corner and then rotated the drawing object to achieve different results.

To change the center of the transformation, follow these steps:

1. With the **Select**  tool, select the drawing object you want to transform.
2. In the bounding box, drag the point that is in the center to the new position.



3. Scale or rotate the drawing object.
 - To use the new position of the pivot point as you scale, press [Alt] as you drag. If you don't press [Alt], **Toon Boom Studio™** scales the drawing object from the opposite corner that you drag from.
 - To rotate from the center, press [Alt] as you rotate. If you don't press [Alt], **Toon Boom Studio™** rotates from the pivot point.
 - Press [Shift] if you want to maintain the relative proportions of the drawing.

See Also

Resizing, Flipping, Rotating and Moving Drawing Objects on page 124


Deforming a Drawing Object on page 128

Protecting Drawings on page 398

Cutting, Copying, and Pasting Drawing Objects

You can cut, copy, and paste drawing objects in different areas of the current drawing or place them in a completely different drawing.

To cut, copy, and paste drawing objects, follow these steps:

1. Click the **Select**  tool and select the object you want to cut or copy in the **Drawing View** window.
2. Decide if you want to create copy of the selected object or if you want to remove it.
 - Select **Edit > Copy Drawing Object** to copy the selected object.
 - Select **Edit > Cut Drawing Object** to cut the selected object. The original object disappears from the Drawing View window.
3. Select **Edit > Paste Drawing Object** to place the copied object in the Drawing View window. The pasted object appears slightly offset from the original.
4. If you want to create a new drawing from the selected object, select another cell in the Exposure Sheet window and reselect the Drawing View window before you paste the object.




If you just want to make a copy of the selected objects, press [Ctrl] and drag the select objects.

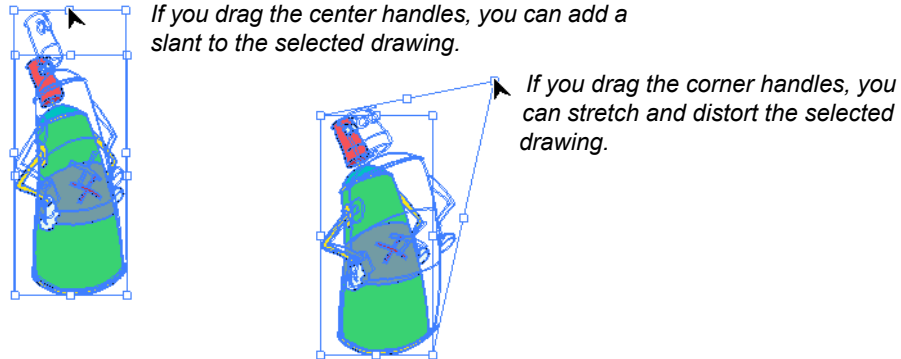
Toon Boom Studio™ automatically creates a copy of the selected objects every time you [Ctrl]+click a selected object.

See Also

Grouping Drawing Objects on page 122
 Ordering Drawing Objects on page 123
 Resizing, Flipping, Rotating and Moving Drawing Objects on page 124
 Deforming a Drawing Object on page 128
 Creating Cycles on page 395
 Exposure Sheet and Timeline Windows on page 354

Deforming a Drawing Object

You can use the Perspective  tool to skew and distort (also known as “deforming”) the selected drawing object in the Drawing View window.



For example, if you had an image you wanted to appear as viewed from an angle, you could draw the image as it looks from the front and then use the **Perspective** tool to distort it so that it would appear like you were looking at it from an angle.

To deform a drawing object, follow these steps:

1. From the **Tools > Select** menu or from the **Tools Palette**, select the **Perspective** tool.
2. Select the drawn objects you want to deform. Press [Shift] to select multiple objects.
3. Drag the selection handles to deform the selected object.

Toon Boom Studio™ redraws the shape with its new perspective.

See Also

Grouping Drawing Objects on page 122

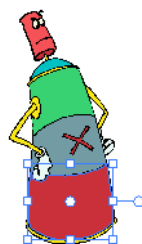
Ordering Drawing Objects on page 123

Resizing, Flipping, Rotating and Moving Drawing Objects on page 124

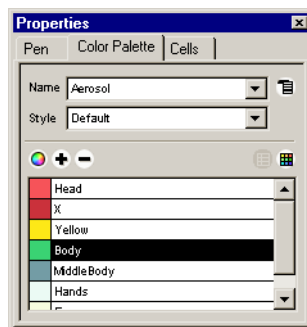
Cutting, Copying, and Pasting Drawing Objects on page 127

Changing the Color of Brush Strokes, Fills and Centerline Objects

After you draw brush strokes and centerline objects and fill them with color, you can modify their color properties using the Color Palette tab in the Properties window.



In this example, we changed the color of the lower body segment to the same green that we used on the top.



To change the color of a brush stroke or color fill:

1. Use the **Select** tool to select the brush stroke, centerline object or color fill whose color you want to change.
2. In the **Color Palette** tab, click the new color swatch you want to assign to the brush stroke or color fill. **Toon Boom Studio™** changes the color of the selection to match the properties of the new swatch.

See Also

Changing the Thickness of Centerline Objects on page 130

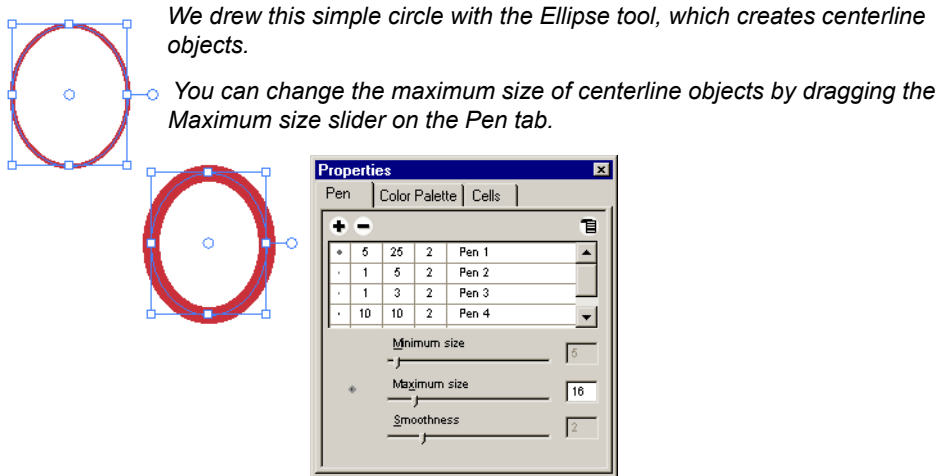
Working with Selections on page 121

Protecting Drawings on page 398

Inking Line Art on page 204

Changing the Thickness of Centerline Objects

To change the properties of the line art, select the line art you want to affect and adjust the line size in the Pen tab or change the line color using the swatches in the Color Palette tab.



You can use the Pen and Color Palette tabs to make the following types of changes:

- To change the color of a line or color region, click the **Select** tool, select the line or region, and select a swatch from the **Color Palette** tab.
- To change the width of lines, use the **Select** tool to select the object and adjust the sliders on the **Pen** tab.

See Also

Changing the Color of Brush Strokes, Fills and Centerline Objects on page 129

Working with Selections on page 121

Drawing Line Art on page 114

Drawing Straight Lines, Ellipses and Rectangles on page 116

Drawing with the Polyline Tool on page 117






Drawing Pencil Lines on page 120


Protecting Drawings on page 398

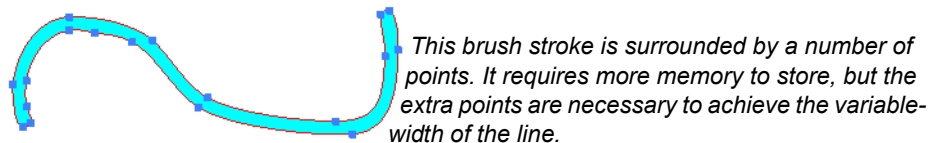
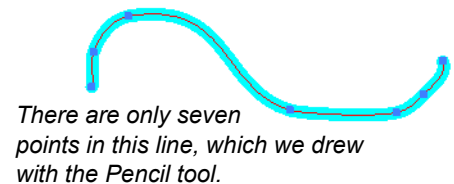
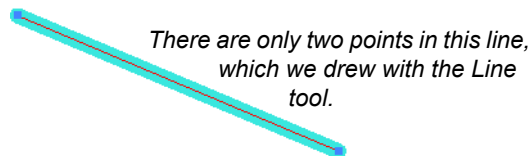
Optimizing Drawing Objects for the Web

When you design your animation for the Web, you should consider taking steps to reduce the file size of your final animation. The smaller the file, the faster it downloads over the Internet, and the faster it will play on the machines of your audience.

Key to the production of small-sized animation is reducing the amount of points in your drawings. The fewer points you have in a line or a shape, the smaller the file size will be because each point requires memory to store it.

Shapes you draw with the Pencil , Line , Polyline , Rectangle  and Ellipse  tools create a minimum amount of points that run down the center of the shape.

Strokes you draw with the Brush  tool require more memory to store because the points that compose it run along the outside of the shape to create the variable-width effect.




Toon Boom Studio™ has a number of tools that you can use to reduce the number of points in your drawings, making them simpler and less heavy. You can use any of these commands to simplify your drawings and reduce the complexity and file size of your animation:

- Converting Brush Strokes to Pencil Lines on page 132
- Reducing Drawing Layers with the Optimize Command on page 133
- Reducing Drawing Layers with the Flatten Command on page 135
- Removing Points with the Smooth Command on page 137
- Merging Layers Using Draw Top Layer on page 138

See Also

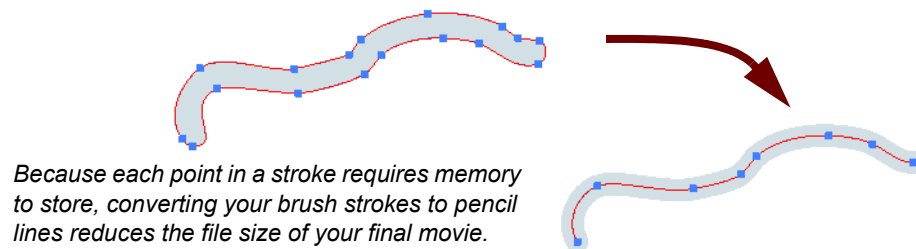
Drawing Line Art on page 114
Cloning Elements on page 381
Creating Cycles on page 395

Converting Brush Strokes to Pencil Lines


After you draw variable-width strokes with the Brush  tool, you can convert the brush stroke to a pencil line to reduce the number of points in the line with the Extract Center Line command.

Toon Boom Studio™ calculates the average of exterior points in a brush stroke to create a center line of points. You should convert your brush strokes to pencil lines before you ink them (changing their color).

If you have brush strokes with two different widths, **Toon Boom Studio™** calculates the average of both widths to create a smooth pencil line with one width size.



To convert selected brush strokes to pencil lines, follow these steps:

1. Select **View > Show Strokes** to display the lines that compose your drawing objects.
2. Click the **Select**  tool and click the brush strokes you want to convert. To select multiple brush strokes, press [Shift] and click the brush strokes.
3. Select **Tools > Optimize > Extract Center Line**.

As soon as you activate the command, **Toon Boom Studio™** converts the selected brush strokes to pencil lines. If the **Show Stroke** command is active, you can see the exterior contour line of the brush stroke move to the center to become a pencil line.



Do not use Extract Center Line on painted zones. Painted zones are surrounded by points and then filled with color. When you Extract Center Line on a painted zone, you may get unexpected results.

See Also

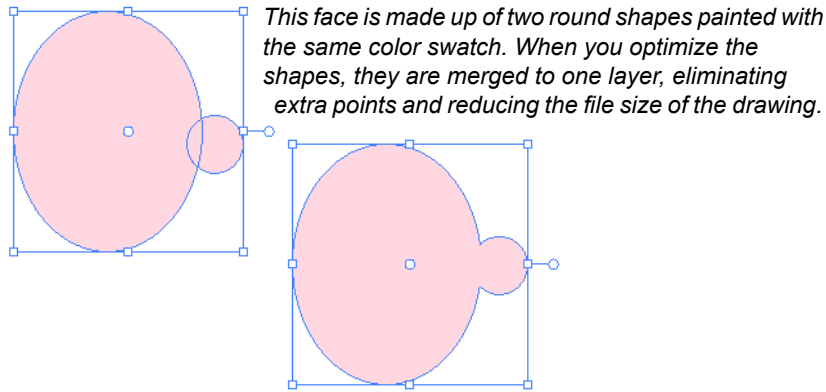
Deleting Points from Vector Shapes on page 148
Reducing Drawing Layers with the Optimize Command on page 133
Reducing Drawing Layers with the Flatten Command on page 135
Removing Points with the Smooth Command on page 137
Merging Layers Using Draw Top Layer on page 138
Protecting Drawings on page 398

Reducing Drawing Layers with the Optimize Command


When you have two overlapping shapes with the same color characteristics (color value and transparency), you can use the Optimize command to reduce the number of layers in the drawing, which reduces the number of redundant points and the file size. **Toon Boom Studio™** automatically performs this function when you export a Macromedia® Flash™ movie.

Optimize will change the drawing objects only if merging the selected objects will not change the appearance of the final image.

For example, if you have selected a number of partially transparent objects, which you layered to create an additive color effect, the selected transparent drawing objects will not be merged. This is because merging the transparent drawing objects will cause them to lose the effect of the layered transparent colors.



To reduce drawing layers with the Optimize command, follow these steps:

1. Select **View > Show Strokes** to display the lines that compose your drawing objects.
2. Click the **Select**  tool and click the brush strokes you want to convert. To select multiple brush strokes, press [Shift] and click the brush strokes.
3. Select **Tools > Optimize > Optimize**.

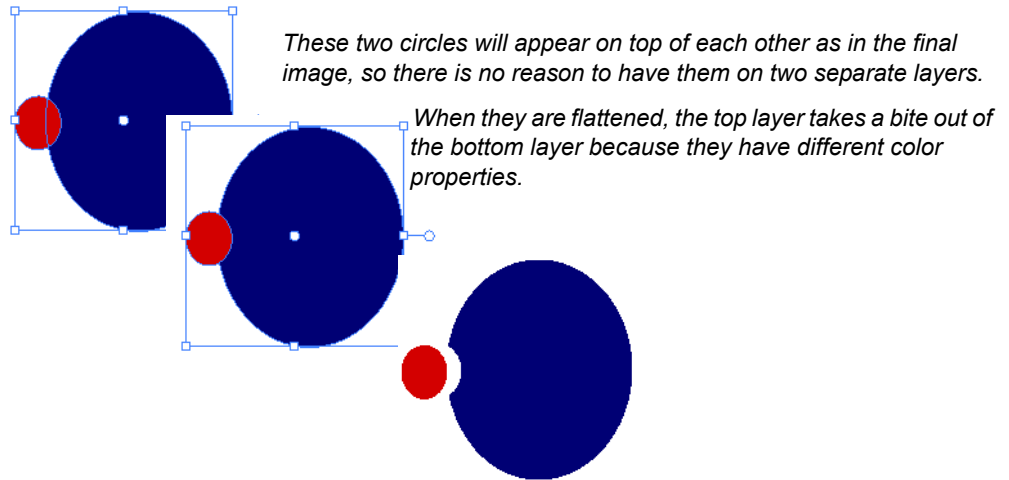
As soon as you activate the command, **Toon Boom Studio™** merges all of the selected objects that it can, while preserving the look of the drawing.

See Also

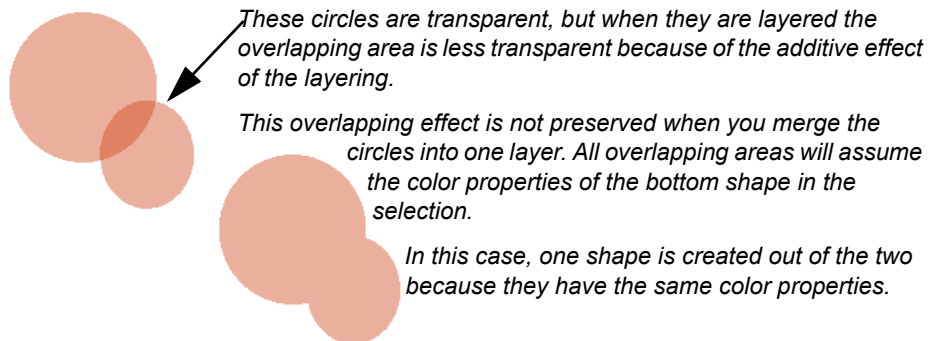
Converting Brush Strokes to Pencil Lines on page 132
Reducing Drawing Layers with the Flatten Command on page 135
Removing Points with the Smooth Command on page 137
Merging Layers Using Draw Top Layer on page 138
Protecting Drawings on page 398

Reducing Drawing Layers with the Flatten Command


The Flatten command merges drawing layers into one, reducing the number of points in your drawings and reducing the file size of your animation.



The Flatten command is different from the Optimize command in that it does not verify first to make sure that the merge will not affect the final appearance of the image. If the layered objects have transparencies, the cumulative effect of the transparency is not preserved when you flatten the layers. Also, the Flatten command may not preserve the layer order of overlapping centerline shapes.



To reduce drawing layers with the Flatten command, follow these steps:

1. Select **View > Show Strokes** to display the lines that compose your drawing objects.
2. Click the **Select**  tool and click the brush strokes you want to convert. To select multiple brush strokes, press [Shift] and click the brush strokes.
3. Select **Tools > Optimize > Flatten**.

As soon as you activate the command, **Toon Boom Studio™** merges all of the selected objects.

See Also

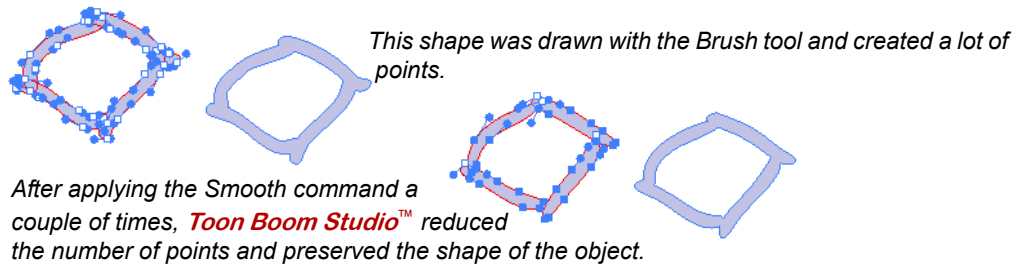
Converting Brush Strokes to Pencil Lines on page 132
Reducing Drawing Layers with the Optimize Command on page 133
Removing Points with the Smooth Command on page 137
Merging Layers Using Draw Top Layer on page 138
Protecting Drawings on page 398

Removing Points with the Smooth Command

Excessive numbers of points in your drawings can increase the size of your web animations unnecessarily. Often you can reduce the number of points in a drawing, adjust the curve, and still maintain the same shape. This can be quite time consuming if you have a lot of brush strokes to adjust.

Toon Boom Studio™ can automate this process for you with the Smooth command. The Smooth command removes unnecessary points from a brush stroke and adjusts the brush stroke so that the curves are maintained.

You can apply the Smooth command repeatedly; however the more times you apply the command the less definition your shape will have.



To remove points with the Smooth command, follow these steps:

1. Select **View > Show Strokes** to display the lines that compose your drawing objects.
2. Click the **Select** tool and click the brush strokes you want to remove points from. To select multiple brush strokes, press [Shift] and click the brush strokes.
3. Select **Tools > Optimize > Smooth**.

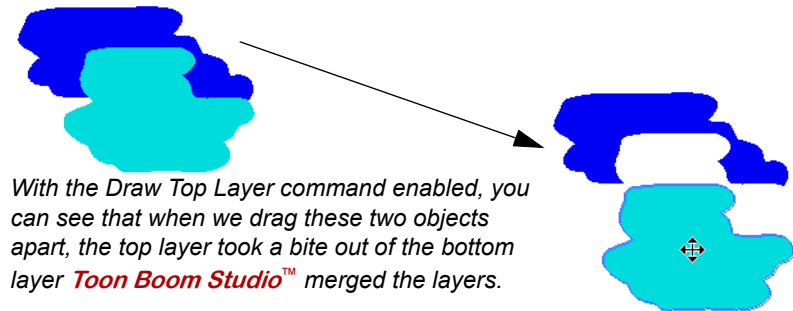
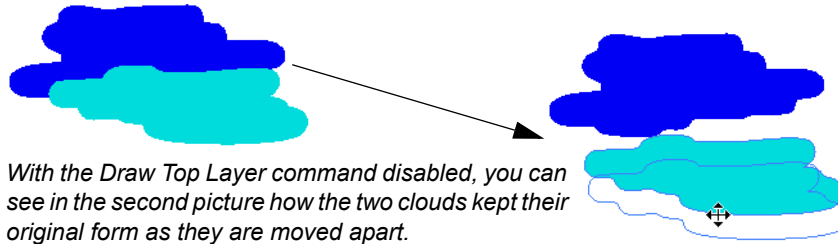
As soon as you activate the command, **Toon Boom Studio™** removes points and recalculates the curves of the drawing objects you select.

See Also

Converting Brush Strokes to Pencil Lines on page 132
 Reducing Drawing Layers with the Optimize Command on page 133
 Reducing Drawing Layers with the Flatten Command on page 135
 Merging Layers Using Draw Top Layer on page 138
 Protecting Drawings on page 398

Merging Layers Using Draw Top Layer

You can have **Toon Boom Studio™** optimize layers automatically as you draw using the **Draw Top Layer** command. When you activate this command, **Toon Boom Studio™** merges drawing layers as you draw.



To enable or disable the Draw Top Layer command:

- Select **Tools > Draw Top Layer**. A check appears next to the command when it is enabled.



See Also

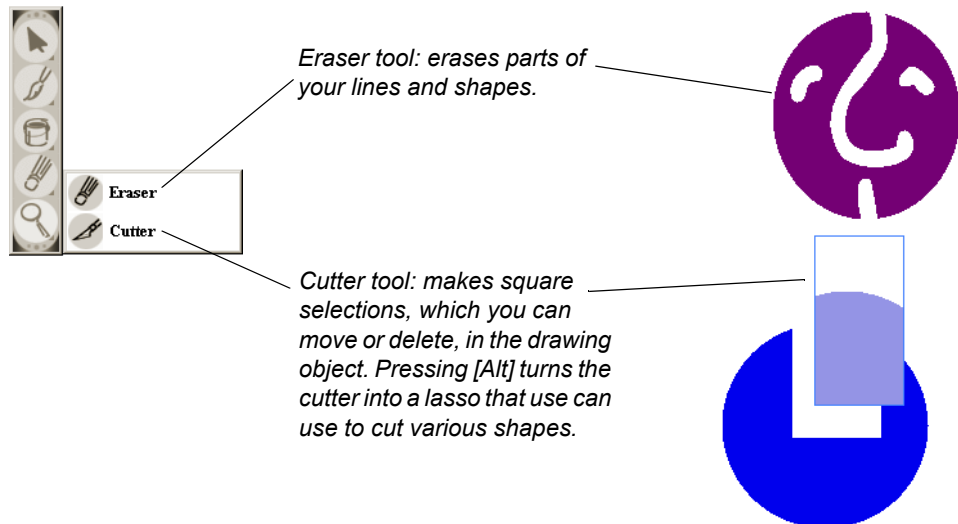
Converting Brush Strokes to Pencil Lines on page 132
Reducing Drawing Layers with the Optimize Command on page 133
Reducing Drawing Layers with the Flatten Command on page 135
Removing Points with the Smooth Command on page 137
Protecting Drawings on page 398

Cutting and Erasing Parts of Drawing Objects

As you use the drawing tools to create the objects and characters in your scene, you may need to cut or erase sections of drawing objects to refine your artwork. For example, if you need only the top left quarter of an ellipse, you can draw a full ellipse and cut away the section that you need.

Toon Boom Studio™ provides you with two tools that allow you to cut or erase parts of your artwork. You can select these tools from the floating Tools Palette.


The Cutter  tool and Eraser  tool both allow you to remove parts from drawing objects, but function differently. The Cutter tool allows you to create cut selections. The Eraser tool allows you to draw the shape of the section you want to erase.



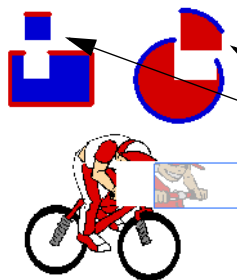
See Also

Cutting Parts from Drawing Objects on page 140
 Erasing Parts from Drawing Objects on page 141
 Protecting Drawings on page 398

Cutting Parts from Drawing Objects

Toon Boom Studio™ has the Cutter  tool that you can use to cut sections from shapes in your Drawing View window. You can then move and modify these cut pieces in any way you please.


The Cutter tool makes a rectangular selection that you can use to select the area you want to cut. By pressing [Alt], you can use a lasso to cut the shape you want.



*The rectangle and ellipse are centerline shapes. When you cut a centerline object, **Toon Boom Studio™** rounds the ends of the cut lines. Notice how the painted area is cut straight.*

The cyclist was drawn with the Brush tool. The Cutter tool makes clean cuts of the brush strokes

To cut parts from drawing objects, follow these steps:

1. From the **Tools > Erase** menu or from the **Tools Palette**, select the **Cutter**  tool.
2. Drag the **Cutter** tool across the section of the drawing object you want to cut. The **Cutter** tool creates a rectangular selection over the area. You can press [Alt] to create a lasso selection mark of the shape you want.
3. Use the **Cutter** tool to move the cut selection away from the original drawing object. If you deselect the cut object or the **Cutter** tool, the cut will disappear and the object will remain uncut.

After you cut your shapes, you can use the **Contour Editor**  tool to reshape them into whatever shape you like.

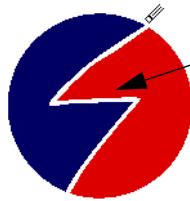
See Also

Reshaping Brush Strokes on page 145
Erasing Parts from Drawing Objects on page 141
Protecting Drawings on page 398

Erasing Parts from Drawing Objects


The Eraser  tool in **Toon Boom Studio™** works as a traditional eraser works on ink and paper, it allows you to remove a section of a drawing object.

With the Erase tool, you can create new shapes or erase sections completely from existing shapes. You can even adjust the size of the erasure line using the controls in the Pen tab.



In this example, we drew an eraser line through the circle.

To erase a section of a shape or brush stroke, follow these steps:

1. From the **Tools > Erase** menu or from the **Tools Palette**, select the **Eraser**  tool.
2. Select the **Pen** tab in the **Properties** window and select a pen style to set the size of the **Eraser** tool.
3. Drag your pointer through the parts of the drawing you want to erase.

Toon Boom Studio™ creates new vectors lines to define the erased zones. If you create a closed zone with the Eraser tool, you can:

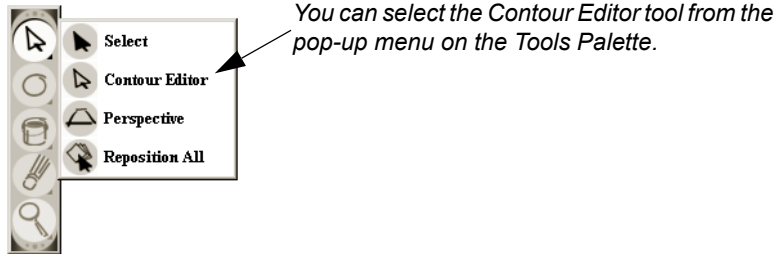
- Fill the zone with a different color.
- Reshape the zone to create an even different form.

See Also

Painting Zones in Your Drawings on page 189
 Modifying the Shape of Vector Lines on page 142
 Setting Up Your Pens on page 150
 Protecting Drawings on page 398

Modifying the Shape of Vector Lines

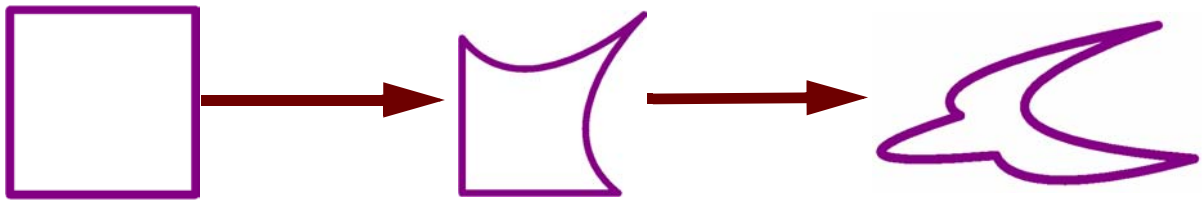
When you draw a line or a shape in **Toon Boom Studio™**, you can use the Contour Editor tool to modify and reshape it.



The Contour Editor is an important tool in the optimization of drawings for the Web.

- With the Contour Editor, you can delete points from lines and shapes you draw. When you reduce the number of points in a drawing, you reduce the amount of memory required to store the file.
- After you delete unnecessary points, you can use the Contour Editor to reshape your drawing objects.

Using the Contour Editor tool, you can transform a simple square into more complex and sleek forms that would have taken longer to draw by hand.



The Contour Editor tool allows you to create smoother curves because you are changing the curve of an existing line instead of drawing it manually.

See Also

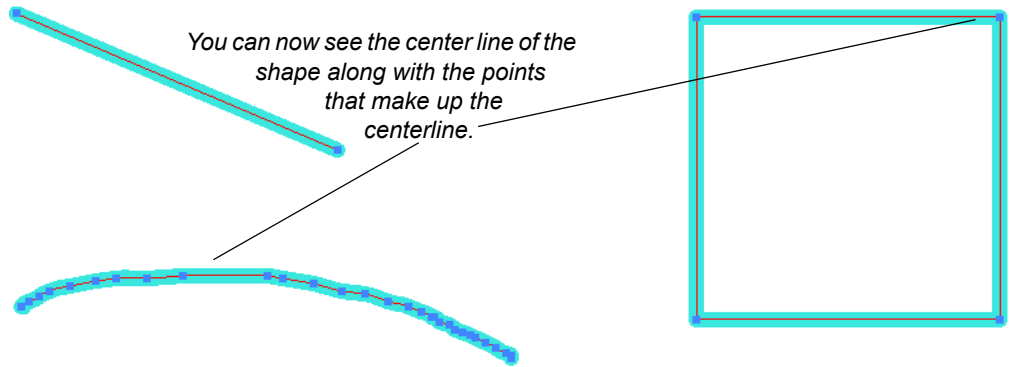
- Reshaping Centerline Shapes
- Reshaping Brush Strokes
- Adding Points to Vector Shapes
- Deleting Points from Vector Shapes

Reshaping Centerline Shapes

Toon Boom Studio™ adds points down the center of centerline shapes drawn with the following tools: Pencil, Line, Polyline, Ellipse, and Rectangle. You can use the Contour Editor to move these points and change the shape of centerline shapes.

To reshape centerline shapes, follow these steps:

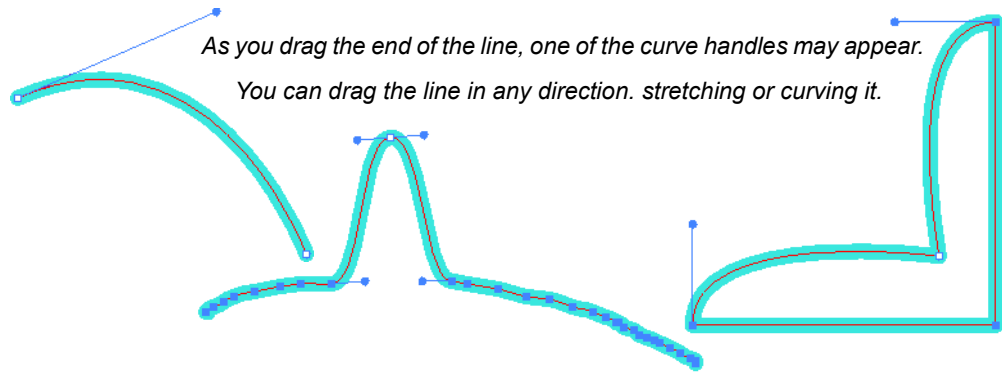
1. From the **Tools > Drawing** menu or **Tools Palette**, select the **Contour Editor**  and click the shape you want to modify.



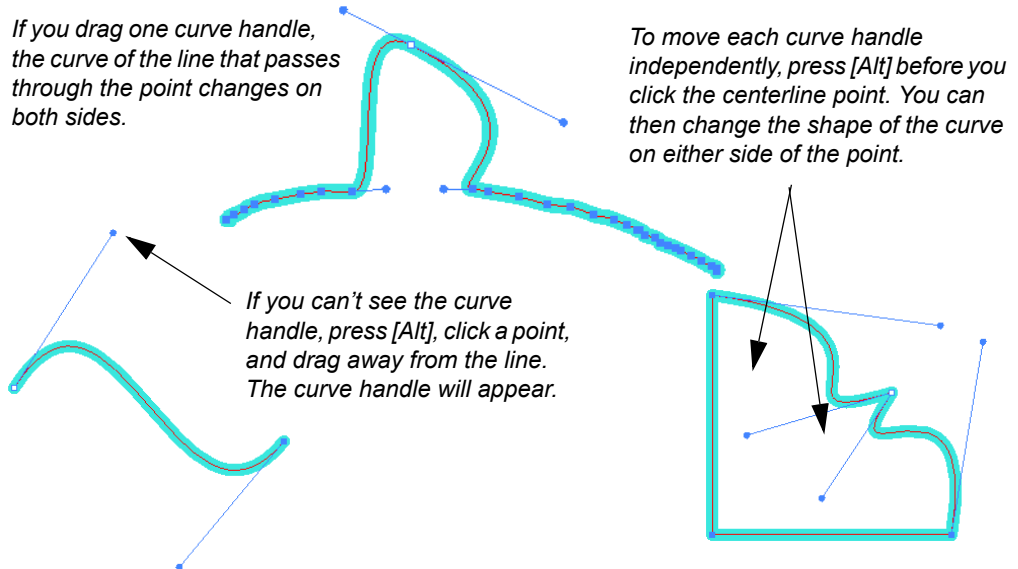
If you want to create closed zones as you reshape your drawing objects, use the Snap to Contour option.

- Select **Tools > Snap to Contour** to enable this option.

2. To change the shape of the centerline shape, drag one of the center points to a new position.



3. Drag one of the curve handles to adjust the curve of the line.



See Also

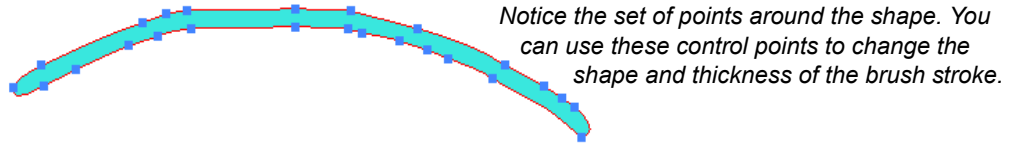
Drawing Line Art on page 114
Reshaping Brush Strokes on page 145
Optimizing Drawing Objects for the Web on page 131
Cutting and Erasing Parts of Drawing Objects on page 139
Protecting Drawings on page 398

Reshaping Brush Strokes

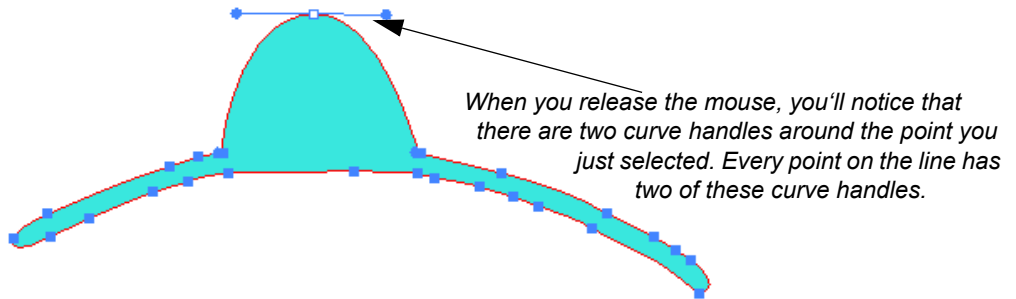
When you use the Brush, **Toon Boom Studio™** creates a shape that is surrounded by points, creating what we call a contour line. **Toon Boom Studio™** also creates contour lines when you paint an enclosed shape. You can reshape either Brush lines or painted zones with the Contour Editor.

To change the shape of a brush stroke, follow these steps:

1. From the **Tools > Drawing** menu or **Tools Palette**, select the **Contour Editor**  and click the shape you want to modify.



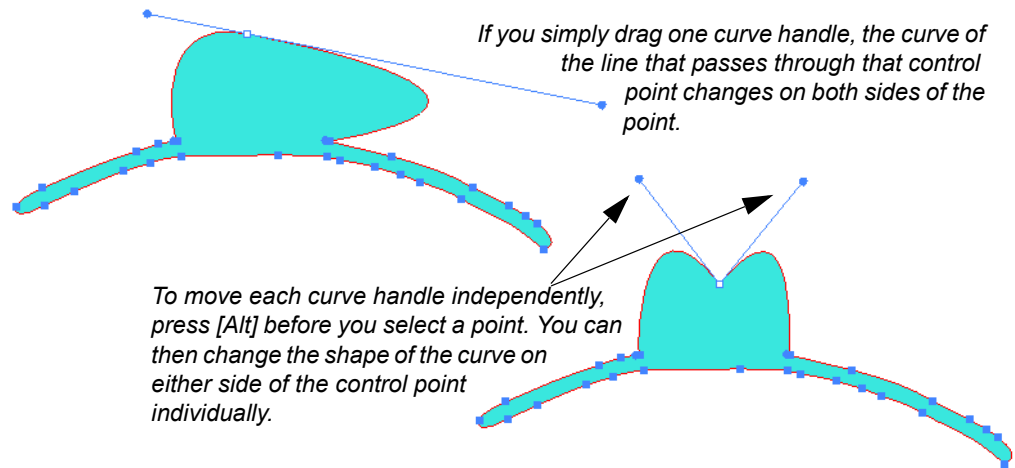
2. To change the shape of the brush stroke, click one of the points drag it to a new position.



If you want to create closed zones as you reshape your drawing objects, use the Snap to Contour option.

- Select **Tools > Snap to Contour** to enable this option.

3. Drag one of the curve handles to adjust the curve of the line. You can use these curve handles to change the amount of curve in the line between the current point and two point on either side.



See Also

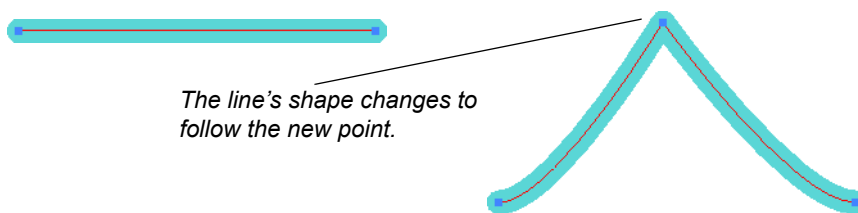
- Drawing Line Art on page 114
- Reshaping Centerline Shapes on page 143
- Optimizing Drawing Objects for the Web on page 131
- Cutting and Erasing Parts of Drawing Objects on page 139
- Painting a Zone with a Solid Swatch on page 190
- Protecting Drawings on page 398

Adding Points to Vector Shapes


All vector shapes in **Toon Boom Studio™** are composed of points. These points mark an edge or a position where the center line or contour line changes direction. You can add more points to a center line or contour to add a more pronounced edge to a shape or a line.

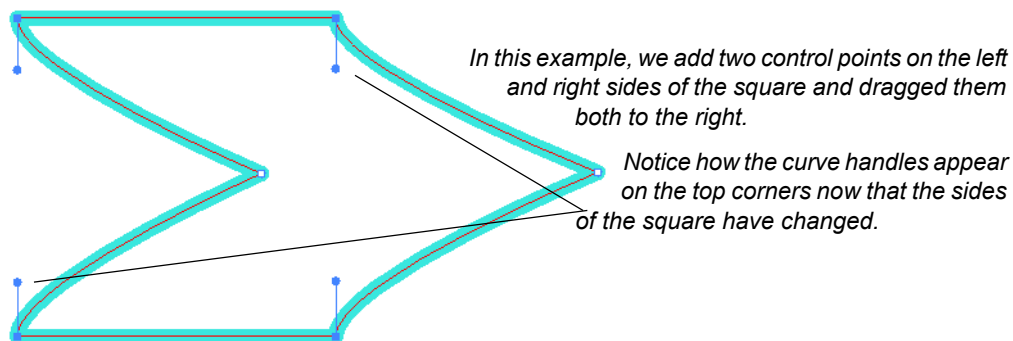
For example, if you wanted a straight line to flow upwards from the start point and then turn back down sharply to the end point, you could add a point to the center of the line and drag it upwards to the new position.

You can add as many points as you like. However, the more points you add, the greater the file size will be in the final animation.



To add points to vector artwork, follow these steps:

1. From the **Tools > Drawing** menu or **Tools Palette**, select the **Contour Editor**  and click the shape you want to modify.
2. Press [Ctrl] and click on the centerline or contour of the shape you want to modify. A new control point now appears on the line.
3. You can drag this new control point to a new position or use the curve handles to adjust the curve of the line as it passes through the new control point.



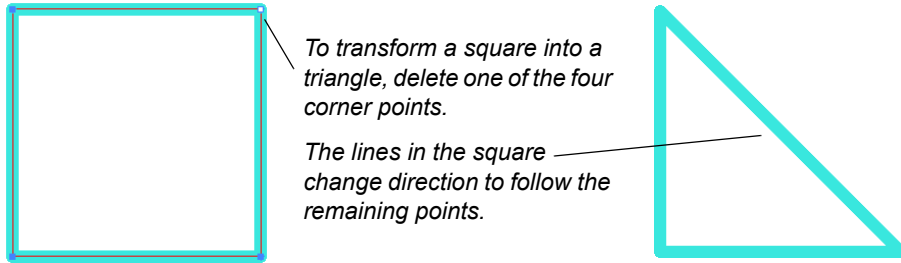
See Also

Reshaping Centerline Shapes on page 143
 Drawing Line Art on page 114
 Optimizing Drawing Objects for the Web on page 131
 Cutting and Erasing Parts of Drawing Objects on page 139
 Protecting Drawings on page 398


Deleting Points from Vector Shapes

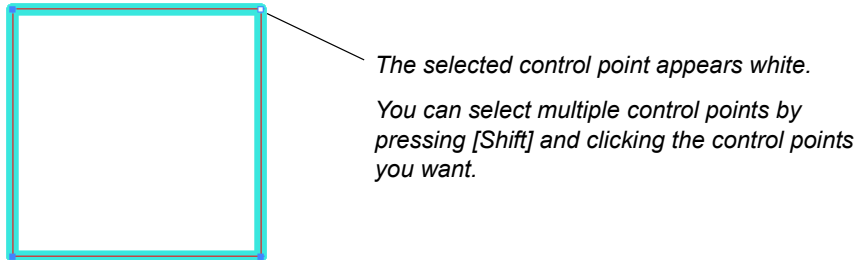
All vector shapes in **Toon Boom Studio™** are composed of points. These points mark an edge or a position where the center line or contour line changes direction.

You can delete points from a center/contour line to remove pronounced edges from a shape or a line. Deleting points from vector artwork also reduces the file size of your final Macromedia® Flash™ movie file.

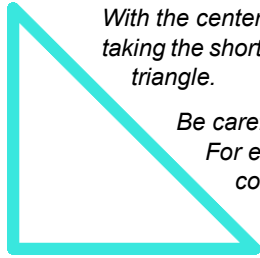


To delete control points from vector artwork, follow these steps:

1. From the **Tools > Drawing** menu or **Tools Palette**, select the **Contour Editor**  and click the shape you want to modify.
2. Click a point on the shape.



3. Press [Del] to delete the selected control point(s). The line that flowed through the selected deleted control point adjusts itself based on the remaining controls points.



With the center point gone, the line straightens itself out, taking the shortest distance between two points, forming a triangle.

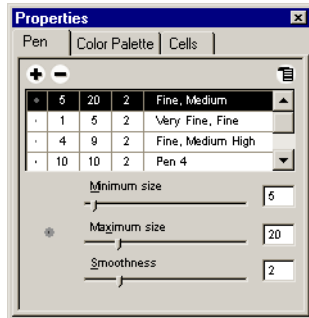
*Be careful not to delete too many control points!
For example, if you delete three of the four control points on this square, the shape will disappear.*

See Also

Adding Points to Vector Shapes on page 146
Drawing Line Art on page 114
Reshaping Brush Strokes on page 145
Painting Zones in Your Drawings on page 189
Protecting Drawings on page 398

Setting Up Your Pens

As you design the elements of your scene, you can select different types of pens to draw lines with different qualities. The lines can be thin or thick, and be smooth or rough. You can configure all this in the Pen tab of the Properties window.



If you don't see the Properties window, select Window > Properties.

Each pen style displays:

- *the name of the pen style*
- *the amount of correction that Toon Boom Studio™ will apply when you draw with it*
- *the minimum/maximum size of its line*
- *a preview of the pen style*

When you select a pen style, all lines you draw will have the properties of that pen style until you select another. You can create customized pen styles for each project you are working on.

For example, if you are working on a project whose drawings use a thick outside line but use thinner lines for the detailed areas, you could create two pen styles for each type of line.

See Also

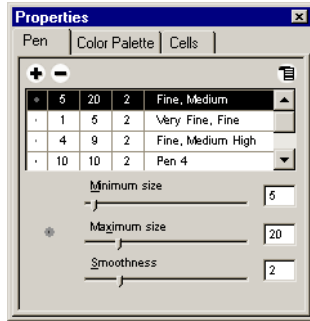
Creating and Removing Pen Styles on page 151

Modifying a Pen Style on page 152

Drawing Line Art on page 114

Creating and Removing Pen Styles

Toon Boom Studio™ provides you with five default pen styles, but you can add your own custom-built pen styles to the **Pen** tab. All pen styles you create are available in every scene in the current animation set.





As you draw your objects, you can continue to make adjustments to your pen styles.

To create your own pen style, follow these steps:


1. Click the **Add Pen Style +** button. A copy of the currently selected pen style appears at the bottom of the pen styles list.
2. Select the minimum and maximum size of the drawing line with the **Minimum size/Maximum size** sliders.

The minimum value only applies when you use a pressure-sensitive pen and tablet. If you draw your lines with your mouse, the line thickness always uses the maximum value.

3. Adjust the smoothness of the line with the **Smoothness** slider.
 - **0**: makes a slight adjustment, allowing more sharp edges
 - **10**: makes a greater adjustment, reducing the number of sharp edges and the number of points in the line (smaller file size in your exported animation).

When you draw a line with the **Brush**  tool or the **Pencil**  tool, **Toon Boom Studio™** makes an adjustment to the line based on the value in this panel. It smooths out any sharp edges or jagged peaks in the line.

4. Right-click the new pen style and select **Rename Pen** from the pop-up menu. The name field for the pen style becomes editable.
5. Type the pen style's name in the **Name** field and press [Enter].

6. To remove a pen style, simply select the pen style and click **Remove Pen Style**  button.

See Also

Modifying a Pen Style on page 152

Setting Up Your Pens on page 150

Drawing Line Art on page 114

Modifying a Pen Style

You can modify the size, smoothness, and name of any pen style in the animation set. When you make changes to a pen style, **Toon Boom Studio™** updates the pen styles in every scene in the animation set. Only drawings you make after the pen changes are affected.

To modify a pen style, follow these steps:

1. Select the pen style you want to modify.
2. Modify the characteristics of that pen style by adjusting the following:
 - Select the minimum and maximum size of the drawing line with the **Minimum size/Maximum size** sliders.
 - Adjust the smoothness of the line from the **Smoothness** slider.
 - Rename the pen style by right-clicking on it and selecting **Rename Pen** from the pop-up menu.



Any changes you make to pen styles only affect the lines you draw afterwards.

If you remove a pen style, any lines you drew with that pen style do not change; the line art remains unchanged even if you delete the pen style that created it.

See Also

Modifying the Shape of Vector Lines on page 142

Resizing, Flipping, Rotating and Moving Drawing Objects on page 124

Modifying a Pen Style on page 152

Setting Up Your Pens on page 150

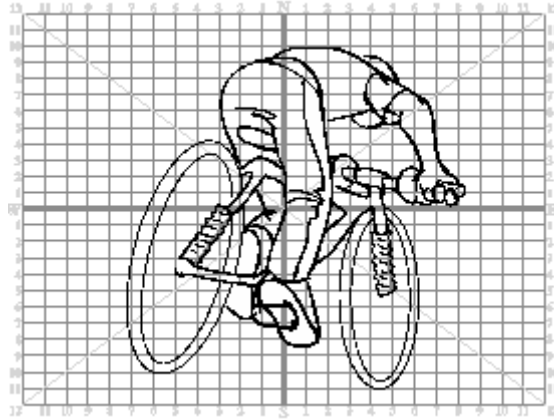
Drawing Line Art on page 114

Creating and Removing Pen Styles on page 151

Setting Up Your Drawing Space

You can customize your drawing space to suit your needs. You can:

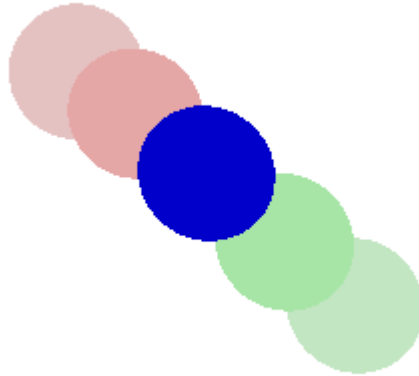
- Display a grid that you can use as a reference while you draw.



- Rotate the drawing space so that you can get a better angle on your drawings.



- Use the onion skin to view previous and next drawings in an element layer.



See Also

Displaying the Drawing Grid on page 154

Rotating the Drawing Space on page 156

Onion Skin: Displaying the Next and Previous Drawings on page 157

Static Light Table: Displaying Selected Drawings on page 160

Auto Light Table: Displaying All Images in a Frame on page 163

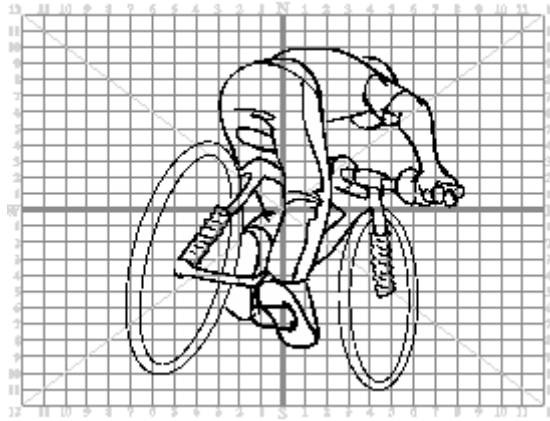
Zooming and Panning the View Window on page 164

Displaying the Drawing Grid

When you are drawing your objects, it may be difficult to draw them on a plain white surface that does not have any reference points. You can choose to display a grid that appears either behind or in front of your objects.









When you have the size of your animation set to 500 x 375, the 12 Field Grid is equivalent to the camera frame in Sceneplanning Mode.



You can use the grid to judge the distance and size of objects in your scene.

In this example, the grid measures 12 fields in size and the drawing appears above it.

To display the grid in the Drawing View window, follow these steps:

1. Select **View > Grid > Show Grid** or click the **Grid**  button in the **Grid Control** toolbar. A grid appears in the **Drawing View** window.
2. Select the type of grid you want to use from either the **View > Grid** menu or the **Grid Control** toolbar. You can choose from the following types:
 - **Normal** : the grid is divided into a standard set of squares of equal size.
 - **12 Field** : the grid measures 12 fields in each compass direction from the grid center.
 - **16 Field** : the grid measures 16 fields in each compass direction from the grid center.
3. Select where you want the drawings to appear in relation to the grid from either the **View** menu or the **Grid Control** toolbar. You have two choices:
 - **Underlay** : the grid appears below the drawing.
 - **Overlay** : the grid appears on top of the drawing.

See Also

Rotating the Drawing Space on page 156
 Onion Skin: Displaying the Next and Previous Drawings on page 157
 Static Light Table: Displaying Selected Drawings on page 160
 Auto Light Table: Displaying All Images in a Frame on page 163
 Zooming and Panning the View Window on page 164

Rotating the Drawing Space

Short of flipping the monitor on its side, drawing on your computer presents new challenges that the traditional artists didn't have to deal with. However, **Toon Boom Studio™** solves that problem with the Rotate commands.

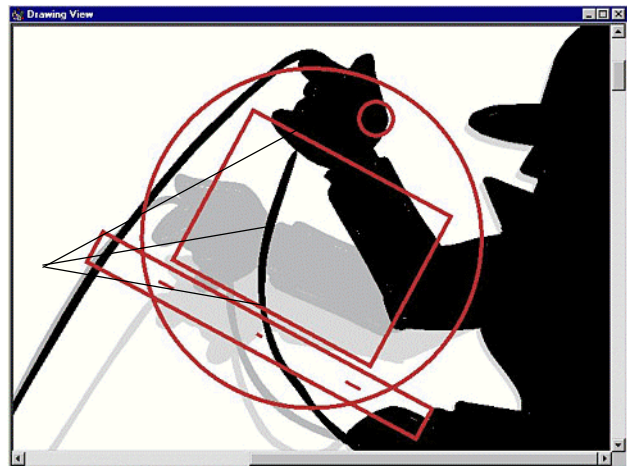


With the rotary light table, you can change your view of your drawing space so that you get the best angle.

It's only natural to want to rotate your drawing space while you are working. Getting the best drawing angle, while seeing all of the relevant parts of your drawing, is important for you to be able to finely craft your drawings.

You can rotate your drawing space so that you get a better angle on a part of the drawing you are working on.

In this example, the artist is using the Onion Skinning feature to see the previous position of the arm and is rotating the drawing space to draw the current drawing from a different angle.



To rotate the drawing space, do one of the following:

- To turn your drawing space to the right, select **View > Rotate Clockwise** or press [V].
- To turn your drawing space to the left, select **View > Rotate Counter Clockwise** or press [C].
- To display the **Rotary Light Table** in the **Drawing View** window, 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].

See Also

Displaying the Drawing Grid on page 154

Onion Skin: Displaying the Next and Previous Drawings on page 157

Static Light Table: Displaying Selected Drawings on page 160

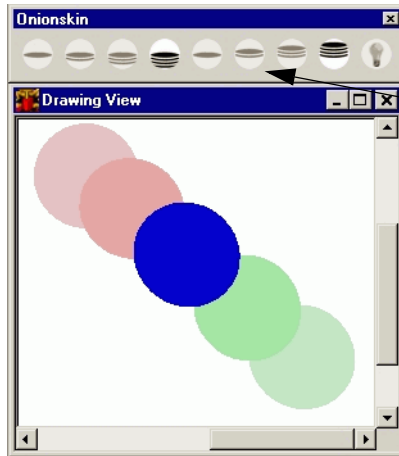
Auto Light Table: Displaying All Images in a Frame on page 163

Zooming and Panning the View Window on page 164

Onion Skin: Displaying the Next and Previous Drawings

As you develop your scene elements, it can be very helpful to see drawings that will appear before or after the current drawing. You can use these drawings as a reference to figure out the size, angle, or position of the drawing you are working on.

In **Toon Boom Studio™**, the onion skin allows you to display the other drawings in the same element that appear either before or after the current cell. You can display up to three previous and three next drawings in the onion skin.



You can use the buttons in the Onionskin toolbar to set your display options.

In this example, we can see two previous drawings and the two next drawings. The current drawing is on top of all the other drawings in the display.

Toon Boom Studio™ displays previous and next drawings in the onion skin in a different color so that you can distinguish them.

To set the Previous Onion Skin depth, click one of the buttons on the left side of the Onion Skin toolbar:

- **No previous Drawings visible** (icon: single circle): displays only the drawing in the currently selected cell.
- **Previous Drawing Visible** (icon: two overlapping circles): displays the drawing before the current selection.
- **Previous Two Drawings Visible** (icon: three overlapping circles): displays the two drawings before the current selection.
- **Previous Three Drawings Visible** (icon: four overlapping circles): displays the three drawings before the current selection.

To set the Next Onion Skin depth, click one of the buttons on the right side of the Onion Skin toolbar:

- **No next Drawings visible** (icon: single circle): displays only the drawing in the currently selected cell.
- **Next Drawing Visible** (icon: two overlapping circles): displays the drawing after the current selection.
- **Next Two Drawings Visible** (icon: three overlapping circles): displays the two drawings after the current selection.

- **Next Three Drawings Visible** : displays the three drawings after the current selection.

You can also select the onion skin depth by selecting it from the **View > Onion Skin** sub-menu.

See Also

Displaying the Drawing Grid on page 154
Rotating the Drawing Space on page 156
Static Light Table: Displaying Selected Drawings on page 160
Auto Light Table: Displaying All Images in a Frame on page 163
Zooming and Panning the View Window on page 164
Setting Onion Skin Options on page 159

Setting Onion Skin Options

You can change how drawing objects appear in the onion skin to suit your working style.

To set onion skin options, follow these steps:

1. Select **Edit > Preferences**. The **Preferences** dialog box opens.
2. Click the **Light Table** tab.
3. Select your color shading option.
 - If you want previous and next drawings to appear in their original color and faded, de-select the **Enable Color Shading** option.
 - If you want previous and next drawings to appear as different colors, select the **Enable Color Shading** option.
4. If the **Enable Color Shading** option is selected, you can choose colors for previous and next drawings.
 - Double-click the **Previous Drawing Color** or **Next Drawing Color** square and select a new color from the **Color** dialog box.
5. Click **OK** when you are done.

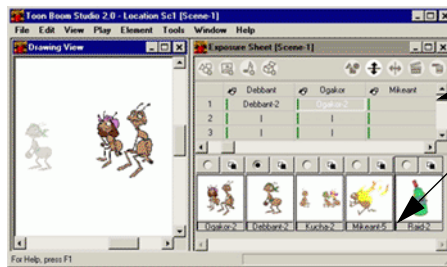
See Also

Onion Skin: Displaying the Next and Previous Drawings on page 157
Setting Up Your Drawing Space on page 153

Static Light Table: Displaying Selected Drawings

As you create your drawings, you may need to see drawings from other elements in your scene so you can figure out how to draw the new drawing. While you can use the Onion Skin toolbar to see next and previous drawings in the same element, you can't use them to see drawings in other element columns.


To display specific drawings from other elements, you can place them in the Static Light Table. The Static Light Table displays a paler version of the selected drawing in the Drawing View window while you work on other drawings.



The Static Light Table appears just below the exposure sheet when you click the Toggle Static Light table button.

If you change the drawings that appear in the Static Light Table panel, the Static Light Table panel updates its contents immediately.

To add a drawing to the Static Light Table, follow these steps:

1. Click the **Static Light Table**  button in the **Exposure Sheet** window.

The **Static Light Table** panel appears at the bottom of the **Exposure Sheet** window.

2. Drag the cell that contains the drawing or image you want to display into the **Static Light Table** panel.

A thumbnail of the selected drawing appears in the **Static Light Table** and the drawing appears slightly dimmed in the **Drawing View** window (unless you have it currently selected, in which case it appears in full color).

3. To remove drawings in the **Static Light Table**, you have two options:
 - To remove selected drawings, right-click the selected drawing and select **Delete** from the pop-up menu.

- To remove all the drawings, right-click anywhere in the **Static Light Table** and select **Delete All** from the pop-up menu.

See Also

Displaying the Drawing Grid on page 154
 Rotating the Drawing Space on page 156
 Onion Skin: Displaying the Next and Previous Drawings on page 157
 Auto Light Table: Displaying All Images in a Frame on page 163
 Zooming and Panning the View Window on page 164
 Changing the Display of Objects in the Static Light Table on page 161

Changing the Display of Objects in the Static Light Table

When you load drawings into the Static Light Table, you can modify their display properties so that they appear differently in the Drawing View window. These properties only affect how the drawings appear while they are in the Static Light Table; they do not affect the original drawings.

For example, if you had a drawing in the Static Light Table panel and it was hiding another drawing you wanted to work on, you have two choices:

- You can hide it from view (while keeping it in the Static Light Table).
- You can change its layering order so that it no longer hides the drawing you want to see.





Click this button to change the front/back position of the drawing in the Static Light Table.

Click this button to show/hide the drawing in the Static Light Table.

To change the display properties of the objects in the Static Light Table, do any of the following:

- To show/hide a drawing, click the **Display** radio button above the thumbnail.
 - ⇒ When you select the **Display** radio button, the drawing appears in the **Drawing View** window.
 - ⇒ When you deselect the **Display** radio button, the drawing disappears from the **Drawing View** window, although it still appears in the **Static Light Table**.

- To show/hide all the drawings in the **Static Light Table**, right-click in the **Static Light Table** panel and select one of the following commands from the pop-up menu:
 - ⇒ **Show All**: displays all the drawings in the **Static Light Table**.
 - ⇒ **Hide All**: hides all the drawings in the **Static Light Table**.
- To change the layering order of a drawing, click the layering icons above the drawing's thumbnail.
 - ⇒ **Overlay** : places the currently selected **Static Light Table** image above the currently selected drawing in the **Exposure Sheet** window.
 - ⇒ **Underlay** : places the currently selected **Static Light Table** image below the currently selected drawing in the **Exposure Sheet** window.
- To change the layering order for all the drawings in the **Static Light Table** panel, right-click in the **Static Light Table** panel and select one of the following options from the pop-up menu:
 - ⇒ **Overlay All**: places all the drawings in the **Static Light Table** above the currently selected drawing.
 - ⇒ **Underlay All**: places all the drawings in the **Static Light Table** below the currently selected drawing.

To enable/disable the shading of objects that appear in the Static Light Table, follow these steps:

1. Select **Edit > Preferences**. The **Preferences** dialog box opens.
2. Click the **Light Table** tab.
3. In the **Static Light Table** panel, select **Enable Shade**.
 - When this option is selected, the color of objects in the Static Light Table is paler than the original.
 - When this option is de-selected, objects in the Static Light Table have the same color shading as the original.

See Also

Onion Skin: Displaying the Next and Previous Drawings on page 157

Static Light Table: Displaying Selected Drawings on page 160

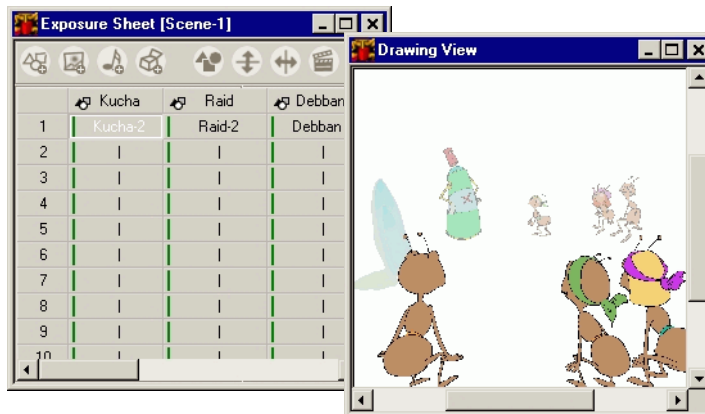
Auto Light Table: Displaying All Images in a Frame on page 163

Auto Light Table: Displaying All Images in a Frame

You can use the Auto Light Table when you want to see all of the images in a frame. Only the elements that are selected to show in the Element List will appear in the Auto Light Table.

The Auto Light Table can help you draw objects in relation to each other. For example, if one character is grabbing something from another, you will need to see all of the drawings together to get a sense of how to position the characters' hands.

In the Auto Light Table, the selected element appears on top of all other elements, and the rest of the elements are displayed based on their layer order in the Exposure Sheet window.



With the Auto Light Table activated, you can see all of the drawings at the selected frame.

To activate the Auto Light Table:

- Click the **Auto Light Table** button or select **View > Onion Skin > Auto Light Table**. All the drawings from the elements in the exposure in the current frame appear in the **Drawing View** window.


See Also

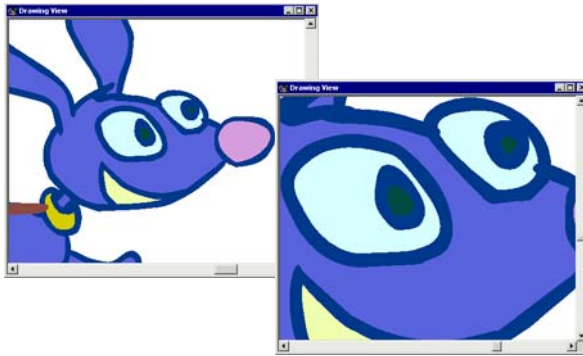
Displaying the Drawing Grid on page 154
 Rotating the Drawing Space on page 156
 Onion Skin: Displaying the Next and Previous Drawings on page 157
 Static Light Table: Displaying Selected Drawings on page 160
 Zooming and Panning the View Window on page 164

Zooming and Panning the View Window

As you work on your scene in the **View** windows, you can change the zoom factor so that you can zoom in closer to see some parts of your drawings in more detail or zoom out to see the entire frame.

There are two ways to change the zoom factor on your drawing:

- You can use the **Zoom In** and **Zoom Out** commands in the **View** menu.
- You can use the **Zoom**  tool to zoom in and out of a specific point or a selected zone.




To zoom in on a specific part of your drawing, follow these steps:

1. Click the **Zoom** tool in the **Tools Palette** toolbar or select **Tools > View ? Zoom**. The pointer becomes a magnifying glass.
2. Decide which part of the drawing you want to see in greater detail. You have two choices:
 - If you want to see a general area, click once on that area. If you want to zoom in closer, click the area again.
 - If you want to see a specific region in greater detail, drag the **Zoom** tool to create a selection region. The **Drawing View** window zooms-in on the region you selected.
3. To zoom-out, press [Alt] and click the **Zoom** tool on the **Drawing View** window. The zoom factor decreases, displaying more of the drawing.
4. To reset the zoom level, select **View > Reset Zoom**.

To zoom-in/out using the commands in the View menu:

- Select **View > Zoom In** to increase the zoom factor. You can also press the [X] key.
- Select **View > Zoom Out** to decrease the zoom factor. You can also press the [Z] key.
- Select **View > Reset Zoom** to reset the zoom level. You can also press [Shift]+[Z].

To pan the Drawing View window:

- Use the **Grabber**  button or press [Spacebar] and move the view of the **Drawing View** window.
- To return to the center of the **Drawing View** window, select **View > Recenter** or press [Shift]+[Spacebar].

See Also

Displaying the Drawing Grid on page 154

Rotating the Drawing Space on page 156

Onion Skin: Displaying the Next and Previous Drawings on page 157

Static Light Table: Displaying Selected Drawings on page 160

Auto Light Table: Displaying All Images in a Frame on page 163

Chapter 4

Importing Artwork

This chapter explains how to import visual content, such as bitmaps and movies, created outside in another application.

This chapter includes the following topics:

- **Importing Static Images (Bitmaps) on page 168**
- **Vectorizing Bitmaps on page 171**
- **Importing Illustrator and PDF Files on page 173**
- **Importing Flash Movies on page 174**
- **Repositioning All Drawings on page 175**

Importing Static Images (Bitmaps)

Bitmaps might be larger in file size than vector drawings, but they do create a different visual effect that is often desirable in animated movies.

As you are setting up your scene, you may want to use a background image for your characters to act against. You can import any bitmap supported by the version of QuickTime® installed on your computer, including BMP, JPEG, PNG, GIF, PSD and PICT, as well as others.



In this scene, we used an image from a city alley as the backdrop for our characters.

You must import bitmap images into Image elements. When you place a background image in your scene, make sure you place the element column at the extreme left (the bottom layer) of the exposure sheet. If you activate the Auto Light Table in Drawing Mode and you place a background element to the right of an other element, you may only see the background element in your Drawing View window.



Graphic formats like TIFF and TGA support an alpha channel, which allows you to make certain parts of an imported image transparent.

To import a bitmap image into your scene, follow these steps:

1. Select **Element > New > Image Element** to add an image element to your animation.

You can also click the **Add Image Element**  button in the **Exposure Sheet** window.

2. Right-click the cell where you want to place the bitmap image and select **Import Images** from the pop-up menu. The **Open** dialog box opens.
3. Select the bitmap you want to import and click **OK**.

The bitmap you selected appears in the selected cell. You'll probably want to extend this image's exposure time so that it appears for the necessary length of your scene.

See Also

Importing Flash Movies on page 174

Timing/Exposing Drawings and Images on page 401

Linking Templates to Media Elements on page 420

Creating Transparent Bitmaps on page 169

Adding Many Elements to a Scene on page 373

Repositioning All Drawings on page 175

Creating Transparent Bitmaps

Bitmap graphics are shaped like rectangles, regardless of the shape of the image within them.

For example, if you have an image of a dog that you want to place on top of some other elements, the area around the dog must be transparent so that the background image appears behind the dog, and the dog appears in the scene.



We made the area around the dog transparent so that the background shows through and the dog blends into the scene.

If you have a bitmap you want to use within the layering order of your elements, you must make the non-image portion of your graphic transparent so that you can see elements behind the bitmap and that other elements can appear to pass by the bitmap in the action of your scene.



There are a couple of bitmap file formats that save transparency in an alpha (matte) channel, including the 32-bit TARGA format (TGA), TIFF, SGI and PSD.

To create an image that has transparent areas, follow these steps:

- 1.** Open the graphic in a third-party graphics application
- 2.** Add an alpha channel to the image and create a transparent shape that will reveal the rest of the channels in the image.
- 3.** Save the graphic in a file format that preserves the alpha channel.
- 4.** Import the transparent graphic into **Toon Boom Studio™**. **Toon Boom Studio™** assumes that the alpha channel is “straight” (not pre-multiplied).

If you can see “around” the object in the image, then you have successfully created a transparent graphic.

Refer to your graphic application’s documentation for instructions on how to define transparent areas.

See Also

Importing Flash Movies on page 174
Timing/Exposing Drawings and Images on page 401
Linking Templates to Media Elements on page 420
Adding Many Elements to a Scene on page 373

Vectorizing Bitmaps

As you develop your animation, you may want to integrate hand-drawn pictures. You can scan these pictures and import them as bitmaps into image elements. However, you cannot edit bitmap images in **Toon Boom Studio™**. In addition, bitmap images are not as flexible as vector drawings when it comes to resolution and file size.

Rather than importing your scanned drawings as bitmaps, you can transform the scanned images into vector drawings so that you can benefit from **Toon Boom Studio™** vector technology.

When you import and vectorize bitmap images, you must select an appropriate image filter and threshold. You may have to experiment with different settings to achieve the best results for your drawings.

All color bitmaps are transformed into grayscale during the vectorization process. Any pure color (with an RGB value of 255) will be converted to white and ignored during the vectorization process. If you are vectorizing color bitmaps, you should recolor pure color regions that you want to be vectorized, with another color.

To vectorize bitmap images, follow these steps:

1. In the Exposure Sheet window, select a cell in a drawing element where you want the vector drawing to appear.
2. Right-click the cell and select **Import and Vectorize** from the pop-up window. The Open dialog box opens.
3. Select the bitmap image you want to import and vectorize, and click **Open**. You can select multiple files.
 - Press [Ctrl] to select image files in any order.
 - Press [Shift] to select image files in a series.The **Import and Vectorize Settings** dialog box opens.
4. Select a bitmap filter. You may have to experiment with these settings based on the qualities of the images you are vectorizing.
 - If the lines in your bitmap are thin, select **Smoothing + Loss of Sharpness**. This filter blurs the lines in the bitmap slightly so that thin lines are picked up in the vectorization process.

- If the lines in your bitmap are very fine, select **Smoothing + Greater Loss of Sharpness**. This filter blurs the lines in your bitmap more so that more lines are transformed in the vectorization process.
- If the lines in your bitmap are thick, select **Edge Enhancement**. This filter merges fine lines (noise) into larger lines to create cleaner objects.
- If the lines in your bitmaps are thick and include a lot of fine detail, select **Sharpening With Clearness**. This filter sharpens edges to enhance details in your images.

5. Select a **Threshold** percentage.

The **Threshold** value filters out noise in your bitmaps. Noise can be dirt or faint smudges on your scanned images.

For example, if your value is set to 70%, all color values below 70% are converted to white and ignored in the final image.

6. Click **OK** when you are done.

A progress dialog box opens while **Toon Boom Studio™** imports and vectorizes your images. You can modify these vector drawings like you would any other vector drawing.

See Also

Importing Flash Movies on page 174
Timing/Exposing Drawings and Images on page 401
Linking Templates to Media Elements on page 420
Creating Transparent Bitmaps on page 169
Adding Many Elements to a Scene on page 373
Drawing Line Art on page 114
Modifying the Shape of Vector Lines on page 142
Repositioning All Drawings on page 175

Importing Illustrator and PDF Files

You can import Adobe® Illustrator® vector drawing files or PDF files into a **Toon Boom Studio™** drawing element. **Toon Boom Studio™** supports Adobe® Illustrator® files from version 5 to 10.

When you import Adobe® Illustrator® or PDF files, **Toon Boom Studio™**:

- Converts CMYK colors to RGB.
You can convert the color space of your Adobe® Illustrator® or PDF files when you save them. See Adobe® Illustrator® documentation for instructions. However, to ensure the color results you want, you should develop your Web colors in the Web-safe RGB palette.
- Displays objects that were hidden in the Adobe® Illustrator® file.
- Does not import text. You must convert text to outlines to import it.
- Does not import global color swatches from V8 and under.
- Does not convert transparent objects drawn with the brush tool.

If your Adobe® Illustrator® file contains bitmaps, be sure those bitmaps are copied into the file. If they are linked, **Toon Boom Studio™** can not import them.

To import Adobe® Illustrator® files into your scene, follow these steps:

1. Select a cell in a drawing element column in the **Exposure Sheet** window.
2. Right-click the selected cell and select **Import Illustrator**. The **Open** dialog box opens.
3. Select the file you want to import and click **OK**.

The vector image appears in the **Drawing View** window.

You can modify this drawing just like you would modify vector drawings you created in **Toon Boom Studio™**.

See Also

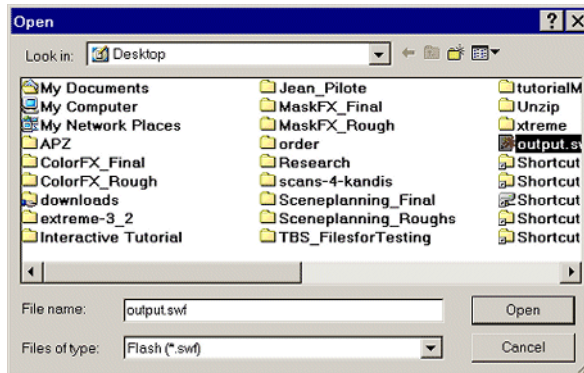
Importing Flash Movies on page 174
Adding Many Elements to a Scene on page 373
Drawing Line Art on page 114
Modifying the Shape of Vector Lines on page 142
Repositioning All Drawings on page 175

Importing Flash Movies

If you import a Macromedia® Flash™ file into your scene, **Toon Boom Studio™** expands the contents of it and lays it out as a collection of elements. If there is any motion, rotation or scaling changes to the objects in the Macromedia® Flash™, **Toon Boom Studio™** creates pegs in the Timeline window to manage those changes.

To import a Macromedia® Flash™ movie, follow these steps:

1. Select **File > Import > Macromedia Flash movie**. The **Open** dialog box opens.



2. Browse to the path that contains the SWF file you want, select it, and click **Open**.

Toon Boom Studio™ expands the artwork within the SWF file and creates a series of element columns in the Exposure Sheet window and Timeline window, preserving the original animation layout.



If you have an SWF file saved as a template in your **Template Browser** window, you can also add an expanded copy of it in your exposure sheet. You can also import SWF files as a linked media element.

See Also

Timing/Exposing Drawings and Images on page 401
 Adding Many Elements to a Scene on page 373
 Drawing Line Art on page 114
 Modifying the Shape of Vector Lines on page 142
 Using Templates on page 417

Repositioning All Drawings

When you hand-draw animation, you don't always draw in the center of your paper. Sometimes you might draw more to the right so that you can see images better as you are flipping through them. Or, if you are preparing work for a traditional process, you may draw your images relative to their final placement in the composited film.

When you import and vectorize bitmap images you may find that they are too far from the center for you to work on them with ease in **Toon Boom Studio™**. Especially when you can work in Sceneplanning Mode to layout entire elements, it makes more sense to draw images in the center of the Drawing View window.

You can reposition all drawings in a vector element in one move to correct drawings that might be too far from the center to work with easily.

To reposition all drawings in an element, follow these steps:

1. Select a drawing element.
2. Select **Tools > Select > Reposition All Drawings**. The vector drawings in the drawing element become selected in the **Drawing View** window.
3. Use your mouse to reposition the drawing. **Toon Boom Studio™** moves all drawings in the element in the same way you moved the drawing in the cell.

See Also

Importing Flash Movies on page 174

Timing/Exposing Drawings and Images on page 401

Linking Templates to Media Elements on page 420

Creating Transparent Bitmaps on page 169

Adding Many Elements to a Scene on page 373

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Chapter 5

Inking and Painting

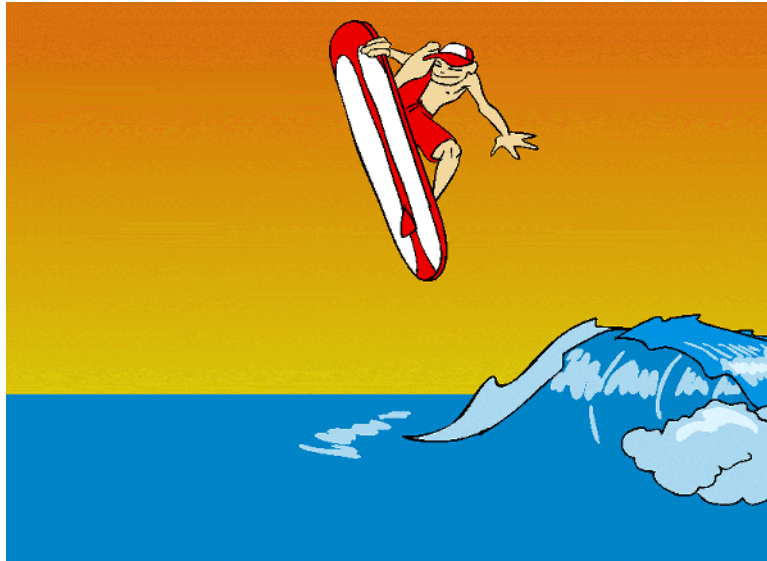
Learn how to produce a vibrant colorful animation using **Toon Boom Studio™** powerful inking and painting tools.

This chapter contains the following topics:

- Coloring Your Toon Boom Studio World on page 178
- Swatches on page 179
- Painting Zones in Your Drawings on page 189
- Closing Gaps in Your Drawings on page 200
- Inking Line Art on page 204
- Managing Your Colors with Palettes on page 205

Coloring Your Toon Boom Studio World


After you create the line art for your drawing elements, you need to complete your artwork by adding color. **Toon Boom Studio™** features a full inking and painting suite that allows you to add spectacular and vibrant colors to your drawings.



Toon Boom Studio™ makes the inking and painting process lightning fast by featuring simple, yet powerful painting tools designed specifically to create high-quality animation. **Toon Boom Studio™** also provides a number of color palette management tools that can help you track, organize and update color swatches.

To ink and paint your drawings, you must be in Drawing Mode.

To switch to Drawing Mode, follow these steps:

- Click the **Drawing Mode**  button or select **View > Drawing Mode**.
If you are already in **Drawing Mode**, the command in the **View** menu reads as **Sceneplanning Mode**.

See Also

Swatches on page 179

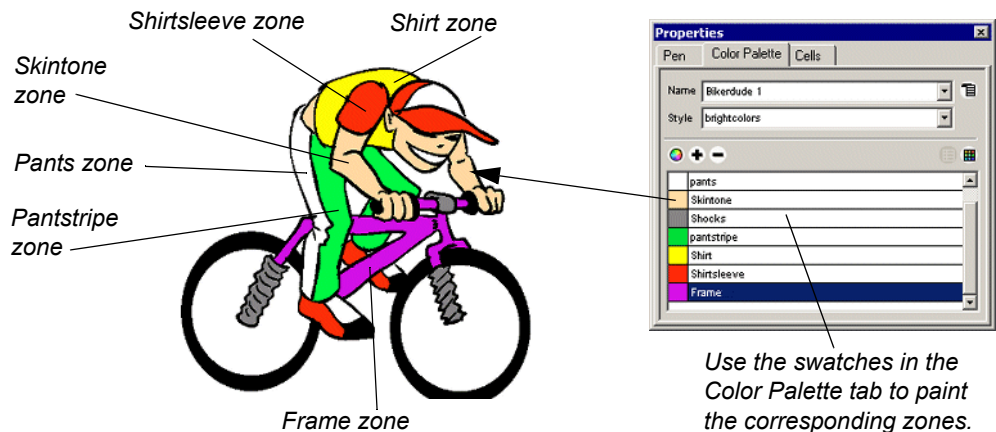
Painting Zones in Your Drawings on page 189

Swatches

A swatch lets you define specific colors and textures that you can use to paint zones or line art in your drawings. You can use swatches to store solid and gradient colors, as well as textures, which allow you to paint with bitmap images.

You can add your own set of swatches to a color palette to define the colors in your animation. If you use swatches to color zones consistently throughout your movie, you can easily update the colors of your drawings when the color model changes.

The **Toon Boom Studio™** color management system updates all zones and line art you paint when you make changes to the color properties of the swatch. For example, if you have a light green stripe on a pair of pants and you want to make the stripe appear darker on all of the pant drawings, all you have to do is change the properties of the swatch and **Toon Boom Studio™** updates all zones that use that swatch with the new color properties.



Use the swatches in the Color Palette tab to paint the corresponding zones.

See Also

- Coloring Your Toon Boom Studio World on page 178
- Painting Zones in Your Drawings on page 189
- Closing Gaps in Your Drawings on page 200
- Inking Line Art on page 204
- Managing Your Colors with Palettes on page 205

Adding a Swatch

When you add a swatch to your palette, the properties of the new color swatch are based on the values of the selected swatch. If you select an existing swatch with properties close to the new color, it will reduce the time you spend defining the new properties.

A color swatch consists of the following:

- RGB and HSV values: define the color of the swatch.
- Alpha value: defines the amount of transparency in the swatch.
- Name: labels the swatch and can indicate where to apply the swatch.

To add a swatch to your scene's palette, follow these steps:

1. Select the **Windows > Properties** and click the **Color Palette** tab.
2. Click the **New Color +** button. A copy of the selected swatch appears in the palette style called **New**. If there is already a swatch named New the latest swatch will appear as New 2 and so on.

You can change the name of the swatch in the Color Picker dialog box.

See Also

Painting Zones in Your Drawings on page 189
Changing RGB or HSV Values in a Swatch on page 181
Creating a Gradient Swatch on page 183
Creating a Bitmap Swatch on page 187

Changing RGB or HSV Values in a Swatch

You can choose between RGB or HSV color models. The RGB and HSV panels represent different color models from which you can select your colors.

- RGB panel: a color model based on a Red, Green, or Blue value.
- HSV panel: a color model based on Hue, Saturation, Value (brightness).

You can edit the RGB or HSV values of an existing swatch in one of two ways:

- By entering specific values
- Visually, using the color panel

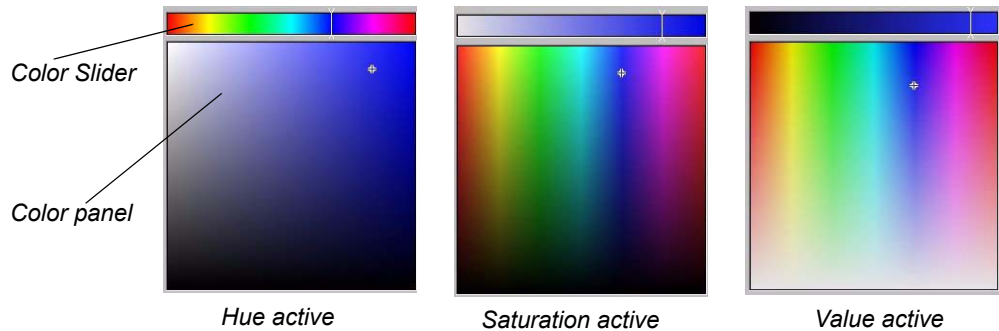
To enter specific RGB or HSV values, follow these steps:

1. Double-click the color swatch you want to change. The **Color Picker** dialog box opens displaying the values for the currently selected swatch.
2. Type the exact **RGB** or **HSV** values in the appropriate fields.
3. After you configure your color swatch, you can close the **Color Picker** by clicking the **X** button in the top right corner of the dialog box or you can select another swatch that you want to edit.

To visually determine the RGB or HSV values, follow these steps:

1. Double-click the color swatch you want to change. The **Color Picker** dialog box opens displaying the values for the currently selected swatch.
2. Select the type of color model you want to use from the **RGB** and **HSV** panels.
3. Use the **Color Slider** and the **Color** panel to select the color you want to use.

As you drag the pointer around the **Color** panel, notice how all the other values in the **RGB** and **HSV** fields change.



For example, to pick a color based on its hue, select the **Hue** radio button. The range of colors in the **Color Slider** would change to display all the hues available. You can then select the remaining **S** and **V** values from the area at the top of the **Color** panel.

After you configure your color swatch, you can close the **Color Picker** by clicking the **X** button in the top right corner of the dialog box or you can select another swatch that you want to edit.

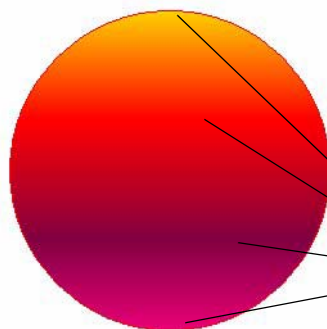
See Also

- Painting Zones in Your Drawings on page 189
- Creating a Gradient Swatch on page 183
- Creating a Bitmap Swatch on page 187

Creating a Gradient Swatch

You can add a color swatch to your palette that paints a zone with more than one color. The painted zone displays multiple colors that blend smoothly from one to another. This is called a gradient swatch.

You can create some spectacular effects using a gradient. For example, you can use a gradient swatch to create a setting Sun.



In this example, the gradient swatch has four transition colors:

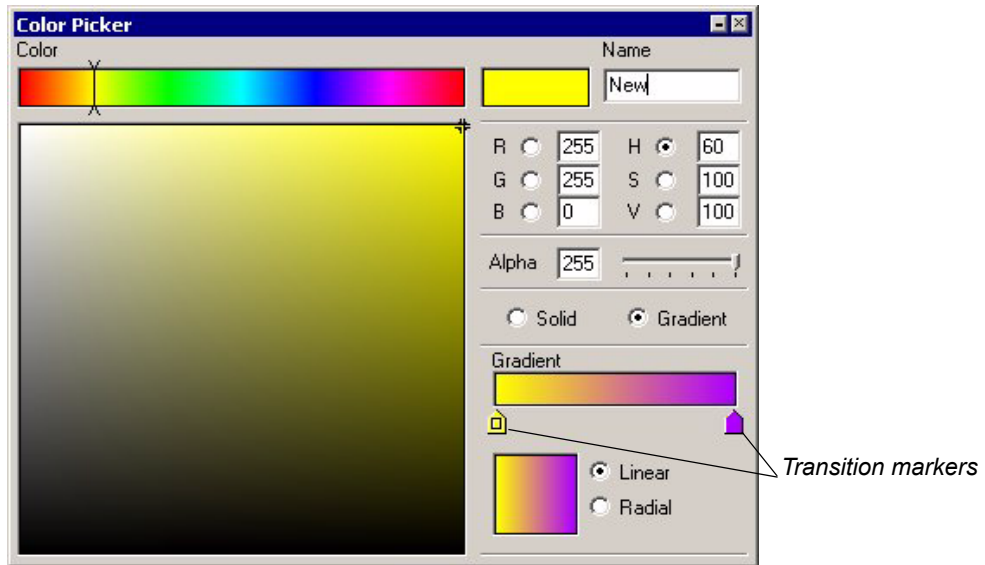
- *yellow*
- *red*
- *purple*
- *fuchsia*

You can see the transition colors at these points.

You can define up to eight different transition points within one swatch. You can then adjust where the transitions take place by dragging transition markers to the appropriate place. In the setting sun example, we used a Linear gradient (the colors change in a straight line), but you can also use a Radial gradient (the colors change in a circular motion).

To create a gradient, follow these steps:

1. Double-click a color swatch on the color palette tab. The **Color Picker** dialog box opens.

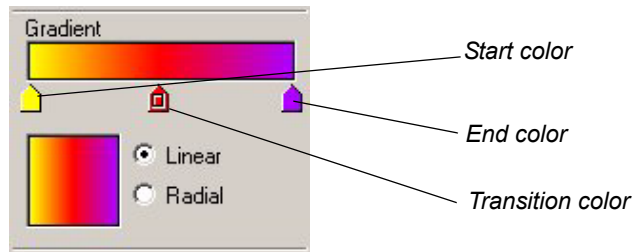


2. Select the type of gradient you want from the **Direction** panel. You have two choices:
 - **Radial**: the colors blend in a circular pattern
 - **Linear**: the color blend along a straight line

3. Define the transition color for each marker by clicking a marker and selecting a color from the **Color** panel. A small square appears on the selected marker.

When you choose a color for a transition marker, **Toon Boom Studio™** adjusts the colors on either side of it based on the colors of the nearest transition markers.

4. Drag the transition markers to where you want the color to be completely changed.
5. To add more color transitions, click directly below the gradient bar. A transition marker appears (you can add a maximum of eight markers).



To remove a transition marker, drag it down until it disappears. The gradient colors re-adjust to the remaining transition markers. You must always have at least two transition markers.

Close the **Color Picker** window by clicking the **X** button in the top right corner of the dialog box.

See Also

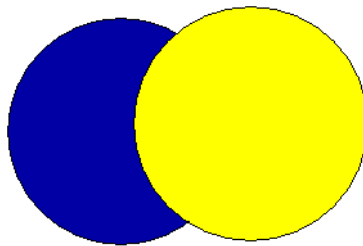
Adding a Swatch on page 180

Painting Zones with Gradients and Bitmap Textures on page 191

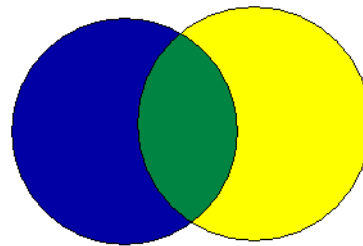
Changing the Transparency of a Swatch

The Alpha value of a color changes its transparency. You can use this technique to produce a foggy scene on a waterfront.

For example, if you have two circles: a blue circle with a yellow circle on top. Changing the Alpha value of the yellow circle lets you control how much of the blue circle you see or hide.



No transparency, the yellow circle blocks out the blue beneath it.



Partial transparency, the yellow circle lets some of the blue show through.

To change the Alpha value of an existing color swatch in your palette:

1. Double-click the color swatch you want to alter, on the color palette tab. The **Color Picker** dialog box opens.
2. Change the transparency by doing one of the following:
 - Grab the **Alpha** slider and move it to alter the transparency value of the color.
 - Type the exact transparency value for the color swatch in the **Alpha** field.

The amount of transparency applied appears in the color swatch in the **Edit** panel.

See Also

Adding a Swatch on page 180

Offsetting Colors in a Palette Style on page 212

Naming a Swatch

Although **Toon Boom Studio™** gives the current swatch a default name you can change it to one that describes where you intend to use the color. The swatch name is more than just a label: it's a way of defining a color zone in your drawing.

For example, let's say you use a swatch called Skintone and you use this swatch in all of your character's skin zones. If you decide you want to darken a character's skin color, you only need to adjust the Skintone swatch. If you applied the Skintone swatch on only the character's skin zones, **Toon Boom Studio™** updates all the drawings accurately.

To change the Name of an existing color swatch in your palette, follow these steps:

1. On the **Color Palette** tab, double-click the color swatch you want to rename. The **Color Picker** dialog box opens.
2. Type the name of the color swatch in the **Name** field.
3. When you've finished editing the swatch, close the **Color Picker**. The name is automatically changed in Swatch list of the color palette. By using names consistently you can make global adjustments quickly and easily.


Creating a Bitmap Swatch

You can paint vector shapes with bitmap images. **Toon Boom Studio™** fills the vector shape with the image, which allows you to achieve some sophisticated painting effects that are difficult with vector painting tools.

For example, you can create a bitmap image of scales. Then you can paint your dinosaur with the scale image. Your bitmap textures can even have transparency.

The smaller the file size of the bitmap texture, the faster your movie will render, and the smaller the file size of your Macromedia® Flash™ movie.

To create a bitmap swatch, follow these steps:

1. Click the **Contextual Menu**  button on the **Color Palette** tab and select **Color > Add Texture**. The **Open** dialog box appears.
2. Choose the texture file you want to add to the swatch.
3. Click **OK** and the texture is added to the swatch.

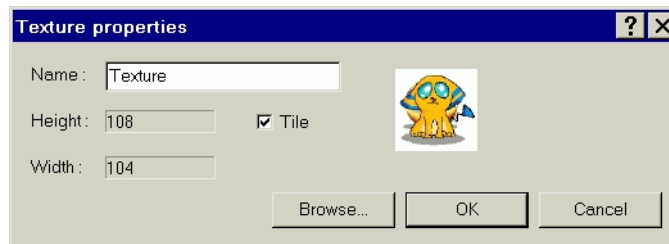
Set a Bitmap Swatch to Tile or Stretch

By default, all bitmap swatches are set to tile. If you click and drag in the vector shape you want to fill, the bitmaps will repeat and the length of one tile is based on the length of the drag area you create.

You can change the properties of a bitmap swatch so that it stretches to fill an area.

To change the properties of a bitmap swatch, follow these steps:

1. In the **Color Palette** tab, double-click the swatch. The **Texture Properties** dialog box opens.



2. Click the **Tile** option to select your option.

- When you select the Tile option, all vectors you fill with the bitmap will tile.
 - When you de-select the Tile option, you turn on the Stretch option and all paint areas will stretch to fill the area of the vector zones.
3. If you want to change the name of the swatch, type the new name in the **Name** field.
 4. If you want to change the image in the swatch, click the **Browse** button and use the **Open** dialog box to find the image you want to use.
 5. Click **OK** when you are done.

See Also

Creating a Bitmap Swatch on page 187

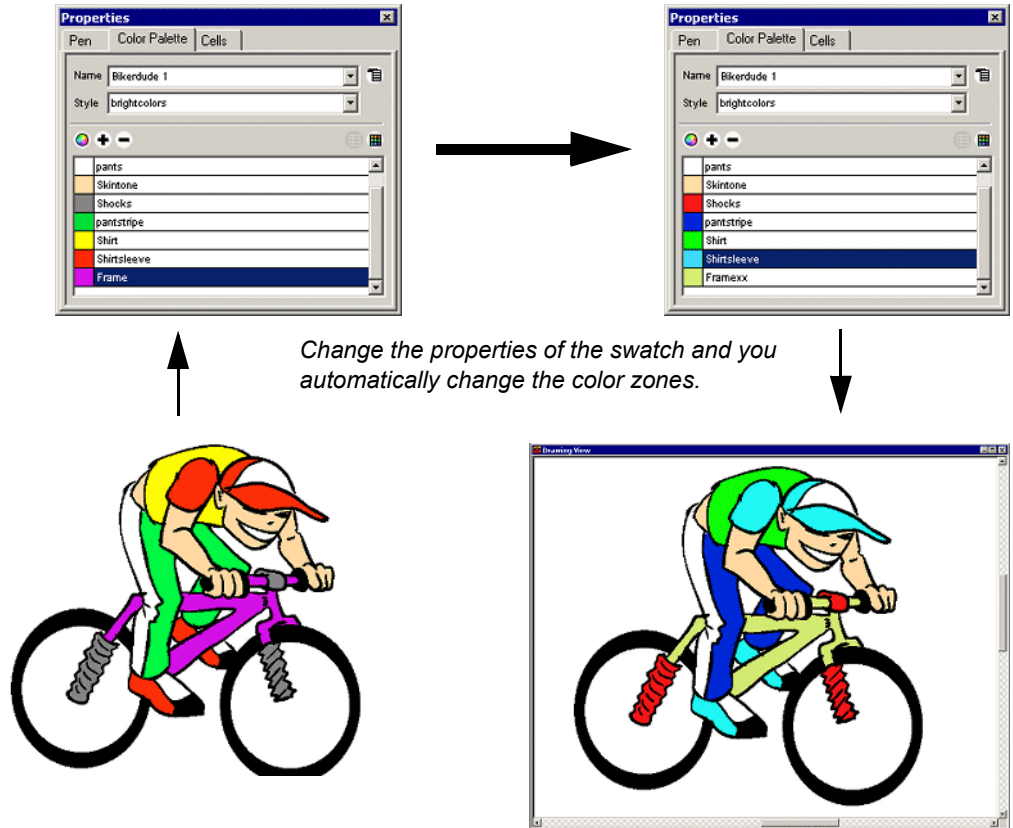
Painting a Zone with a Solid Swatch on page 190

Painting Zones with Gradients and Bitmap Textures on page 191



Painting Zones in Your Drawings

To paint or unpaint the zones in your drawings, you use the **Toon Boom Studio™** painting tools. These tools let you fill closed zones with a solid or gradient color, or a bitmap texture. You can choose colors from the color palette, or an existing line or zone.

When you paint a zone in your drawing, you add color to that zone, and assign a color swatch to it. This lets you make color changes to your drawings without repainting each time.



You have two choices when painting zones with color.

- You can use the **Paint**  tool to fill zones with color or to change the color of a zone that is already painted.
- You can use the **Paint Unpainted**  tool to paint only zones that have no color. This tool allows you to quickly paint many zones with the same color while not changing the color of zones that have already been painted.

See Also

Coloring Your Toon Boom Studio World on page 178

Swatches on page 179

Closing Gaps in Your Drawings on page 200

Inking Line Art on page 204

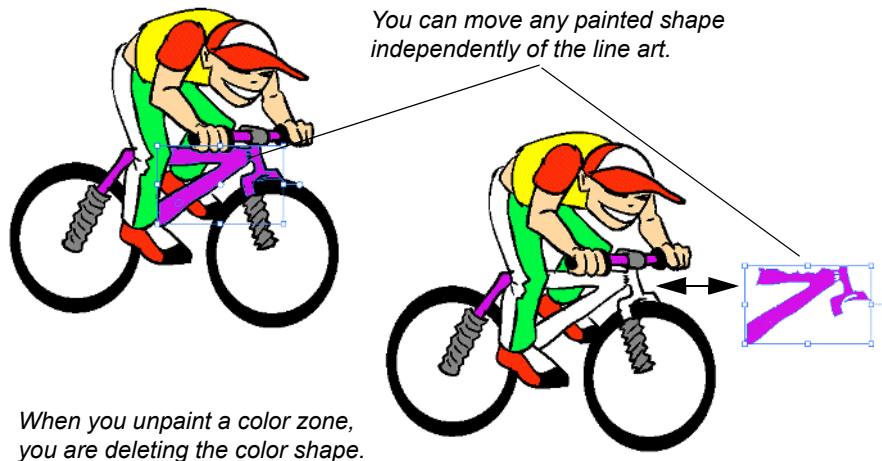
Managing Your Colors with Palettes on page 205

Painting Zones with Gradients and Bitmap Textures on page 191

Drawing Line Art on page 114

Painting a Zone with a Solid Swatch

When you have enclosed zones in your drawings, you can start painting them with the color swatches in your palette style. If you change the properties of a swatch, the color properties of the associated zones change as well.



To paint a zone with a solid color, follow these steps:

1. From the **Color Palette** tab, select the swatch you want to use to paint the zone.
2. Select the **Paint** or **Paint Unpaint** tool from the **Tools > Paint** menu or from the **Tools Palette**.
3. Click in the enclosed zone in your drawing. If you are using the **Paint Unpainted** tool, you can drag your pointer through many zones to paint the unpainted zones with the selected color.

See Also

Painting Zones in Your Drawings on page 189

Unpainting Zones/Line Art on page 198

Closing Gaps in Your Drawings on page 200

Auto Gap Close Options on page 203

Painting Zones with Gradients and Bitmap Textures on page 191

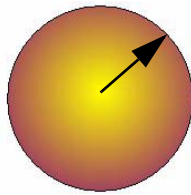
Power Painting Drawings in an Element on page 195

Painting Zones with Gradients and Bitmap Textures

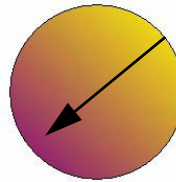
You can fill closed vector shapes with gradients or bitmap texture. **Toon Boom Studio™** fills the entire zone with the gradient or bitmap texture.

To paint a zone with a gradient or bitmap, you can just click inside the vector shape, which fills the zone with the gradient or bitmap. Or you can drag your pointer to control the angle of the fill or the length of the transition.

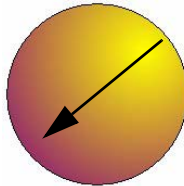
- When you paint with a gradient, the first click sets the position of the start color and where you drag the pointer sets the position of the end color; the zone between the start and end points is the gradient.
- When you paint with a texture, the direction you drag your pointer indicates the direction of the bitmap fill. If your bitmap swatch is set to tile, the distance between the first and last click indicates the length of one image in the tile.



We started this radial gradient at the centre and ended it near the edge of the circle.





We started this linear gradient at the top right and ended it at the bottom left



We started this radial gradient at the top right and ended it near the bottom left of the circle.

To paint zones with gradients and bitmap textures, follow these steps:

1. From the **Color Palette** tab, select the swatch you want to use to paint the zone.
2. Select the **Paint**  or **Paint Unpaint**  tool from the **Tools > Paint** menu or from the **Tools Palette**.
3. Click in the enclosed zone in your drawing or click and drag to control the properties of the fill.

If you are using the **Paint Unpainted** tool, you can drag your pointer through many zones to fill the unpainted zones with the selected gradient or bitmap. However, you don't get to control the properties of the fill when you paint multiple zones.

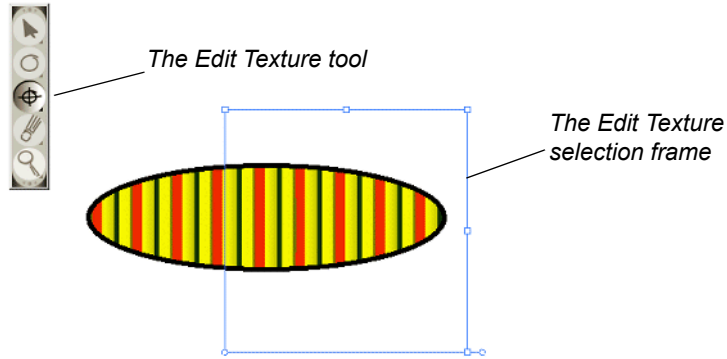
See Also

Painting Zones in Your Drawings on page 189
Unpainting Zones/Line Art on page 198
Auto Gap Close Options on page 203
Power Painting Drawings in an Element on page 195
Closing Gaps in Your Drawings on page 200

Editing Gradient and Bitmap Texture Fills

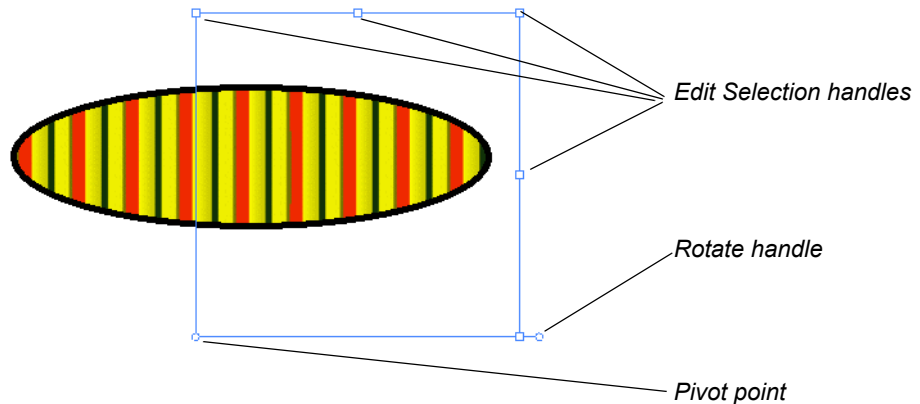
After you fill a zone with a gradient or texture bitmap, you can change its using the

Edit Texture  tool.

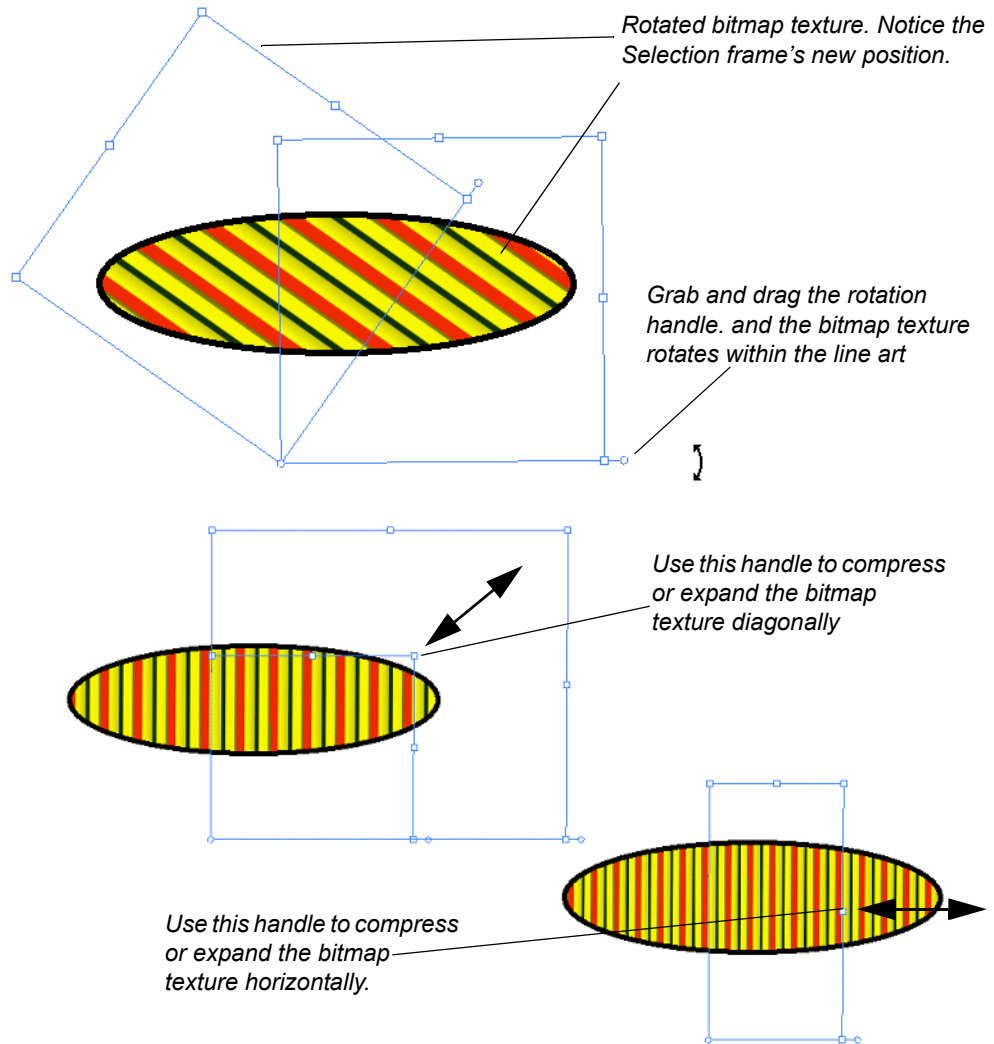


To edit a texture bitmap swatch, follow these steps:

1. Select **Edit Texture** tool from the **Tools > Paint** menu or from the **Tools Palette**.
2. Click the texture you want to edit. An edit selection frame appears around the textured drawing.



3. Rotate or change the direction of the gradient or bitmap fill by grabbing and moving the handles.



See Also

Swatches on page 179
Painting Zones with Gradients and Bitmap Textures on page 191
Creating a Bitmap Swatch on page 187
Set a Bitmap Swatch to Tile or Stretch on page 187

Power Painting Drawings in an Element

You can use **Toon Boom Studio™** Paint All tool to automatically paint closed zones in the same location in an element.

When you use the Paint All tool, you click the Drawing View window in a zone. **Toon Boom Studio™** then flips through all of the drawings in the element to see if there is a closed zone in the location you clicked. If there is, **Toon Boom Studio™** fills the zone with the same color. This can save you a lot of time when you are painting an element with a lot of drawings that are very similar.

You can use the onion skin to select a location to click.



The ant's head stays in the same position throughout the cycle of drawings.

To power paint drawings in an element, follow these steps:

1. Use the **View > Onion Skin** menu to turn on the onion skin so that you see as many drawings in your element as possible.
2. From the **Color Palette** tab, select the swatch you want to use to paint the zone.
3. Select the **Paint** tool from the **Tools > Paint** menu or from the **Tools Palette**.
4. Press [Shift]+[Alt] and click a zone that many drawings in the element share.

Toon Boom Studio™ evaluates all of the drawings in the element to determine if there is a closed zone beneath where you clicked.

You may have to review the drawings and make sure that the zones you wanted painted were.

See Also

Painting Zones in Your Drawings on page 189

Unpainting Zones/Line Art on page 198

Auto Gap Close Options on page 203

Painting Zones with Gradients and Bitmap Textures on page 191


Closing Gaps in Your Drawings on page 200

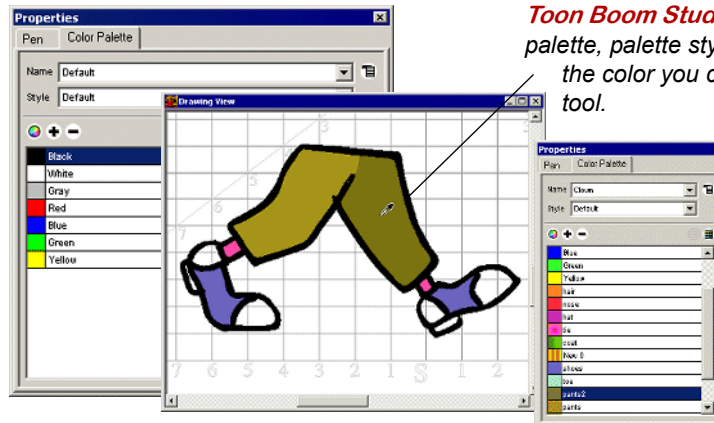
Picking a Swatch from a Line/Zone

To select the swatch you want to draw, ink or paint with, you can click a color swatch on the Color Palette tab. However, if you have a number of color palettes, palette styles and color swatches, it can be time-consuming to select the right color swatch.

You can use the Dropper tool to select a swatch from a drawing. When you click a zone or line with the Dropper tool, **Toon Boom Studio™** selects the color palette, palette style and color swatch that from the line or zone. You can then switch to the Paint tool and color a line or zone with the active color swatch.

To pick a color from a line/zone, follow these steps:

1. Select the **Dropper**  tool from the **Tools > Paint** menu or the **Tools Palette**. If either the **Pencil**, the **Paint** tool, or **Brush** tools are active, you can press [Alt] to activate the **Dropper** tool.
2. Click the line or zone that has the color you want to use. **Toon Boom Studio™** selects the color palette, palette style and color swatch that was used in the line or zone. You can now switch to the **Paint** tool and fill a line or zone with the active swatch.



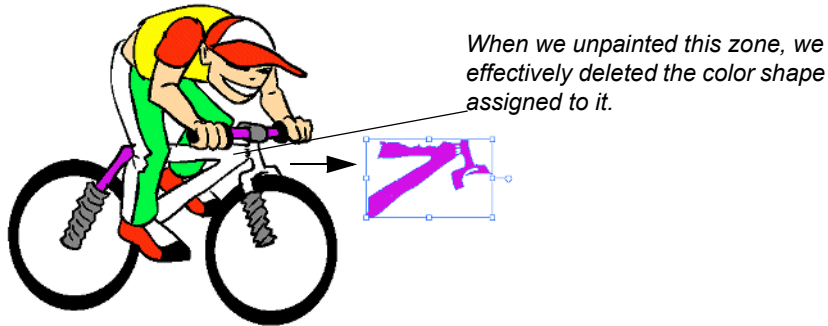
Toon Boom Studio™ selects the color palette, palette style and color swatch of the color you click with the Dropper tool.

See Also

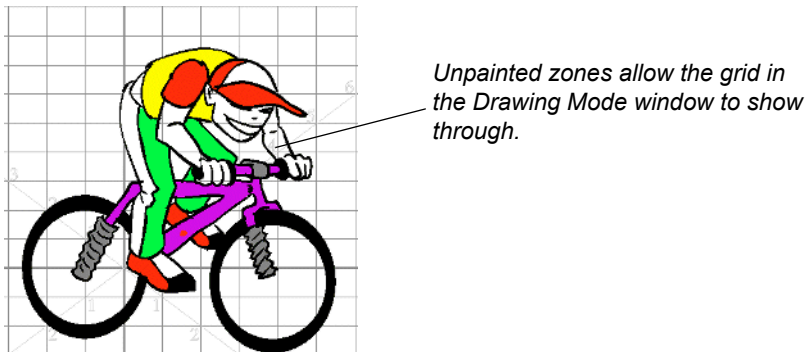
Swatches on page 179
 Unpainting Zones/Line Art on page 198
 Creating Multiple Palette Styles on page 209
 Blending a Color into a Palette Style on page 215

Unpainting Zones/Line Art


You can remove a color entirely from a selected zone using the Unpaint tool. This deletes the color shape you created when you filled the closed zone with a color. You can leave it empty or color it with another color swatch.



This is not the same as just painting it white; when you delete the color shape from a painted zone, whatever is behind the zone shows through.



To remove the color from a zone or the line art, follow these steps:

1. Select the **Unpaint**  tool from the **Tools > Paint** menu or the **Tools Palette**.
2. Click the painted zone or the line art from where you want to remove the color.



If you unpaint a color zone that has line art around it, you'll be able to repaint that zone. But if you unpaint a line, a brush stroke, or a color shape that doesn't have line art, **Toon Boom Studio™** erases that object. You will not be able to repaint that shape.

See Also

Swatches on page 179



Painting Zones with Gradients and Bitmap Textures on page 191

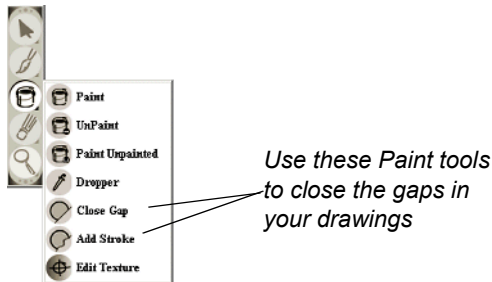
Creating a Bitmap Swatch on page 187

Closing Gaps in Your Drawings

When you draw your line art, you may not always close the zones completely. Sometimes, intentionally or not, you might end a line too soon, creating a gap. To fill zones with color, they must be closed. You must use the gap closing features in **Toon Boom Studio™** if you want to fill unclosed zones with color.

You can use the following tools to close gaps manually:

- The Close Gap  tool closes zones so that you can fill them with a solid color or gradient swatch.
- The Add Stroke  tool allows you to draw shapes that have no visible line art.





While you are painting, you can also use the **Toon Boom Studio™** auto-gap close options to automatically close gaps as you paint.

See Also

Painting Zones in Your Drawings on page 189
Manually Closing Gaps on page 201
Auto Gap Close Options on page 203

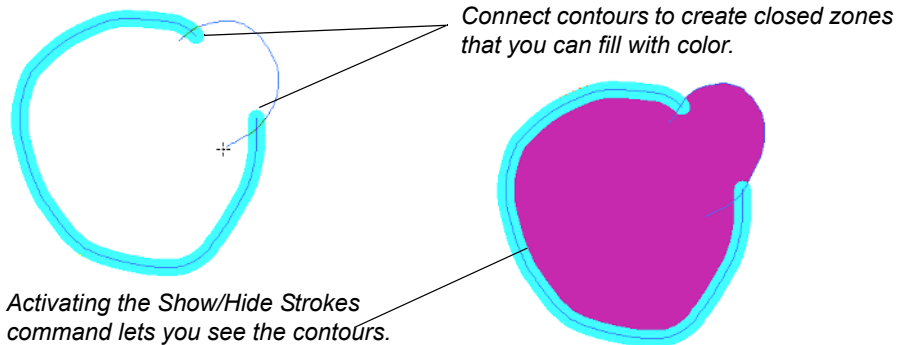
Manually Closing Gaps

To manually close gaps in your artwork so that you can paint the zones, use one of these two tools:

- You can use the Add Stroke  tool to close zones manually, without adding line art.
The Add Stroke tool adds contours, which you can use to close zones that you can fill with color.
- You can use the Close Gap  tool to create closed zones you can fill with color.
The Close Gap tool automates gap closing. It finds the end points closest to the line you draw with the Close Gap tool and draws straight lines to connect the points. You can use this tool to close small gaps that are difficult to see.

To close a gap using the Add Stroke tool, follow these steps:

1. Select **View > Show/Hide Strokes** so that you can see the contours that make up the zones you want to close. Every line and shape should display a thin blue line with occasional contour points.
2. To activate the **Add Stroke** tool, select the **Tools > Paint > Stroke** or select the **Add Stroke** tool from the **Tools Palette**.
3. Drag the **Add Stroke** tool across the open gaps to close any open zones. After you close all of the gaps in a zone, you can fill the zone with color.

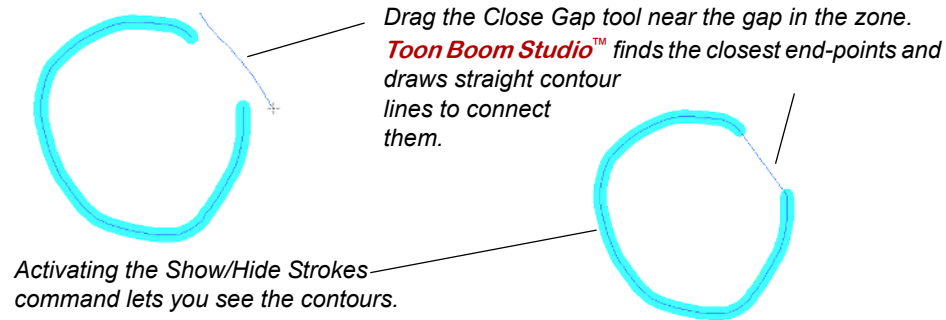


To close a gap using the Close Gap tool, follow these steps:

1. Select **View > Show/Hide Strokes** so that you can see the contours that make up the zones you want to close.

Every line and shape should display a thin blue line with occasional contour points.
2. Select the **Close Gap** tool from **Tools Palette**. Your pointer becomes a crosspoint when the **Close Gap** tool is active.
3. Drag the **Close Gap** tool near the areas on your drawing where there are gaps.

Toon Boom Studio™ finds the closest end-points and draws a straight contour line to connect them. After you close all of the gaps in a zone, you can fill the zone with color.



See Also

Painting Zones in Your Drawings on page 189
Closing Gaps in Your Drawings on page 200
Auto Gap Close Options on page 203
Drawing Line Art on page 114

Auto Gap Close Options

By using the Auto Gap Close option you eliminate gaps in your line art as you paint. This lets you paint your zones without having to be concerned about having gaps in your artwork, which may prevent you from filling zones with color.

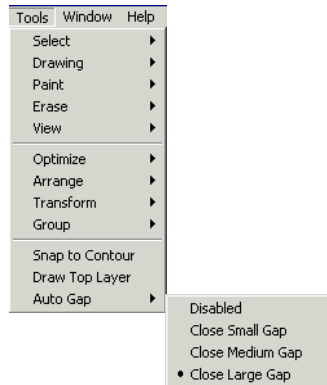
You have three tolerance levels to choose from:

- Close Small Gap
- Close Medium Gap
- Close Large Gap

You can also disable this feature.

To use auto gap closing to close zones, follow these steps:

1. Select **Tools > Auto Gap.**



2. From the Auto Gap menu, select the tolerance level you want to use:

- Disable
- Close Small Gap
- Close Medium Gap
- Close Large Gap

The selected option is automatically applied when you paint your zones.

See Also

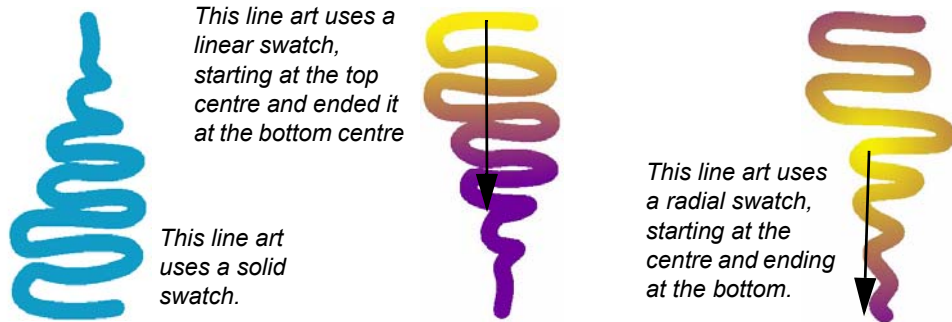
Painting Zones in Your Drawings on page 189

Manually Closing Gaps on page 201

Drawing Line Art on page 114


Inking Line Art

When you draw line art, **Toon Boom Studio™** uses the currently selected color swatch to color the line. If you change the properties of the swatch, the color properties of the associated line art change as well.



You can also change the color properties of a line by inking the line art with the Paint tool. When you ink line art, you assign a new swatch to the line and change its color properties.

To change the line art color, follow these steps:

1. From the **Color Palette** tab, select the swatch you want to use to paint the zone.
 - You can ink brush strokes with solid, gradient or texture swatches.
 - You can only ink centerline shapes with solid swatches.
2. Select the **Paint**  tool from the **Tools > Paint** menu or from the **Tools Palette**.
3. Click the line art you want to ink.

See Also

Swatches on page 179

Painting Zones in Your Drawings on page 189

Managing Your Colors with Palettes on page 205

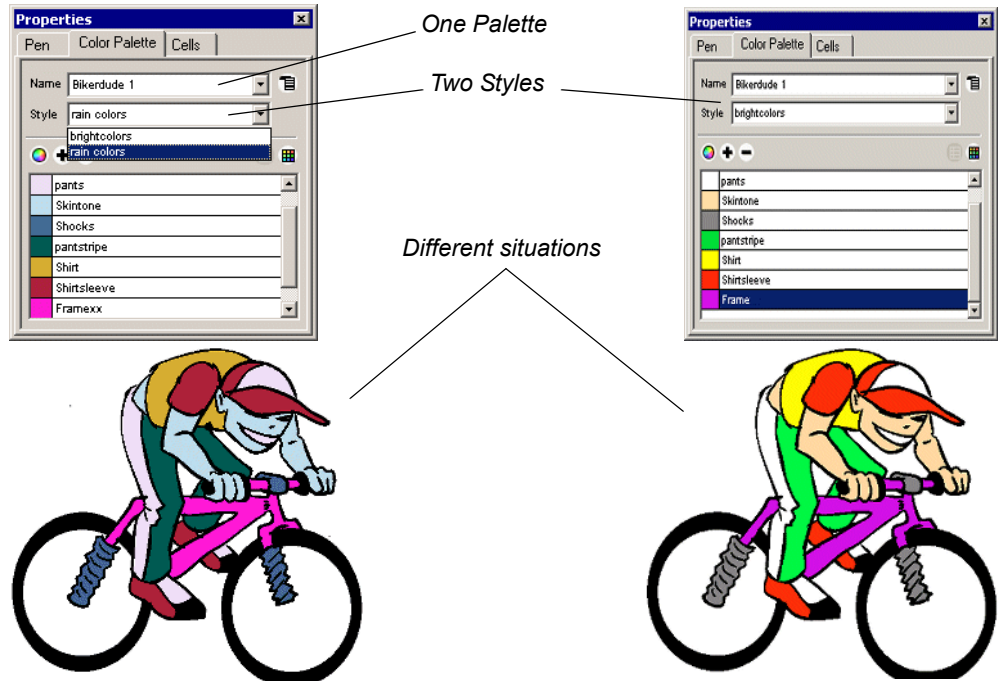
Changing the Color of Brush Strokes, Fills and Centerline Objects on page 129

Drawing Line Art on page 114

Managing Your Colors with Palettes

You can organize color swatches into palettes and palette styles. You use these to create sets of color swatches, custom built to suit different character moods or light settings.

You can create one palette for each character/object and customize the palette styles for each situation that character/object may be in.



For example, let's say you had a character that appeared in two different lighting settings. You could create a palette for that character with two palette styles (one for each lighting setting).

See Also


Coloring Your Toon Boom Studio World on page 178
 Swatches on page 179
 Painting Zones in Your Drawings on page 189
 Closing Gaps in Your Drawings on page 200
 Inking Line Art on page 204

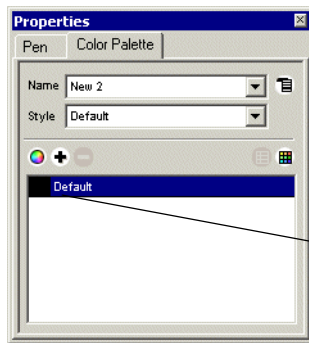
Creating a Palette

For each character and object in your movie, you can have a different palette that contains the customized color swatches organized by palette style. Having individual palettes allows you to control the unique color properties of each part of your scene.

For example, let's say you have a movie with two characters and takes place in two different lighting sets. You would create two palettes (one for each character) that would each have two palette styles (one for each light change).

To create a new palette, follow these steps:

- In the **Color Palette** tab, click the **Contextual Menu**  button and select **Palette > New** from the pop-up menu. A new palette appears in the **Palette Name** drop-list with a default name.



*When you create a new palette, **Toon Boom Studio™** creates a new palette with one default color swatch.*

See Also

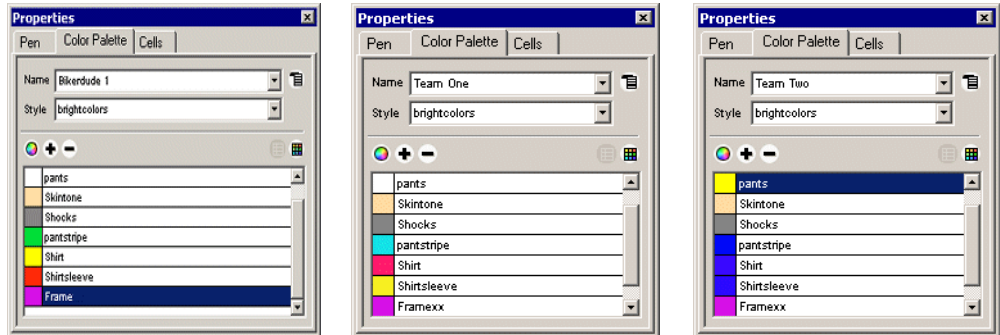
Swatches on page 179
Managing Your Colors with Palettes on page 205
Renaming a Palette on page 208
Creating Multiple Palette Styles on page 209

Copying a Palette

Because many characters have the same types of features that need painting (hair, face, eyes, mouth, and so on), creating copies of a palette can save you time and effort. You can create one palette and use it as a template for other palettes.

When you have this template palette, you can then create a copy of it and change its name, the names of the palette styles, and customize all of its associated color swatches to suit each character and object in your scene.

For example, in this scene we created a palette style that contains most of the necessary color swatches for the Bikerdude character. Then we made two copies of that palette, one for each character, because they all share similar color zones (Skintone, Frame, shirt, pants and so on).



In this example, colors common to each scene remain the same in each Palette.

The colors of the clothing elements are different in each scene so these colors are different in each palette

When you copy a palette, you are also copying all the palette styles contained in that palette. Each palette style contains the color swatches you can use to add color to a specific character.

To create a copy of your palette, follow these steps:

1. Select the palette you want to copy from the **Name** drop list in the **Color Palette** tab.
2. Click the **Contextual Menu** button and select **Palette > Duplicate** from the pop-up menu.

A new palette appears in the **Palette Name** drop-list. This copied palette contains all of the palette styles (and their associated color swatches) that the original palette had.

See Also


Swatches on page 179
 Managing Your Colors with Palettes on page 205
 Creating a Palette on page 206
 Renaming a Palette on page 208
 Creating Multiple Palette Styles on page 209

Renaming a Palette

When you create a new palette or you copy an existing palette, **Toon Boom Studio™** assigns a default name to it. You can rename the palette to give it a more descriptive name.

For example, if you had four characters in a scene, you could create four palettes that each contain the customized color swatches for each character.

To rename a palette, follow these steps:

1. Select the palette you want to rename from the **Name** drop list in the **Color Palette** tab.
2. Click the **Contextual Menu**  button and select **Palette > Rename** to give the new palette a customized name. The **Rename** dialog box opens.
3. Type a new name for the palette in the **Palette Name** field and click **OK**. The new name for the selected palette appears in the **Name** drop-list.


See Also

Swatches on page 179
Managing Your Colors with Palettes on page 205
Creating a Palette on page 206
Copying a Palette on page 206
Creating Multiple Palette Styles on page 209

Deleting a Palette

When you no longer need a palette, or any of its styles, you can delete it. When you delete a palette, any zones or lines you painted with the colors in the palette turn bright red. You can repaint the lines and zones using either a new palette or an existing palette.

To delete a palette, follow these steps:

1. Select the palette you want to delete from the **Name** drop list in the **Color Palette** tab.
2. Click the **Contextual Menu**  button and select **Palette > Delete** from the pop-up menu. A confirmation dialog box opens.
3. Decide if you really want to delete the selected palette.
 - Click **Yes** to delete the selected palette and all of its palette styles.

- Click **No** to cancel the delete palette command.

Toon Boom Studio™ removes the selected palette from the current animation set. The other palettes in the animation set are not affected.

See Also

Swatches on page 179

Managing Your Colors with Palettes on page 205

Creating a Palette on page 206

Copying a Palette on page 206

Renaming a Palette on page 208

Creating Multiple Palette Styles on page 209

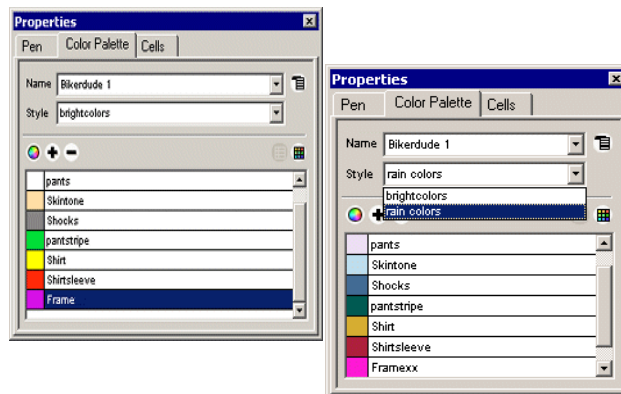
Creating Multiple Palette Styles

A palette includes one or more palette styles. After you create the swatches in a palette style, you can make multiple copies of this palette style and customize them to suit different light and color settings.

Multiple palette styles allow you to adjust a character's colors instantly instead of recoloring each swatch.


When you switch palette styles **Toon Boom Studio™** automatically repaints those zones with the same properties of the active palette style. When you export your animation, the active palette style is used.

When you add a color swatch to one palette style, **Toon Boom Studio™** automatically adds it to all the palette styles in the current palette. This allows you to create different color styles for a single drawing, while keeping the same swatches in each style.



Two styles - one brightly colored for a daytime scene, the other has dull colors for the same scene in the rain.

To create a new palette style in a set, follow these steps:

1. In the **Color Palette** tab, select the palette and palette style you want to use to create the new style.
2. Click the **Contextual Menu**  button and select **Style > Duplicate** from the pop-up menu.

A new palette style appears in the **Palette style** drop-list with a default name (Style#). The copied style contains all of swatches in the original palette style.
3. Customize the color swatches as necessary.



Remember that you can change the color properties of a swatch in a palette style without changing the properties of the same swatch in the other palette styles.

If you attempt to change the name of a swatch, or add a new swatch, all the styles in the palette reflect this change as well.

See Also


Swatches on page 179
Managing Your Colors with Palettes on page 205
Creating a Palette on page 206
Renaming a Palette Style on page 210
Deleting a Palette Style on page 211

Renaming a Palette Style

When you create a palette style, **Toon Boom Studio™** assigns a default name to it. You can rename the palette style to give it a more descriptive name.

For example, if you had a character that had scenes in three different light settings, you could create three palette styles that each contain the same number of color swatches with the same names, but with different color properties based on each type of light setting.

To rename a palette style, follow these steps:

1. Select the palette style you want to rename from the **Style** drop list in the **Color Palette** tab.
2. Click the **Contextual Menu**  button and select **Style > Rename** to give the palette style a new name. The **Rename** dialog box opens.

You can also select this command by right-clicking the top section of the **Color Palette** tab and selecting **Style > Rename** from pop-up menu.

3. Type a new name for the palette style in the **Style Name** field and click **OK**. The new name for the selected palette style appears in the **Palette style** drop-list.

See Also

Swatches on page 179

Creating Multiple Palette Styles on page 209


Deleting a Palette Style

When you no longer need a palette style, you can delete it. However, you cannot delete the last style in a palette. Your only option is to delete the entire palette, deleting all the styles in it.

For example, let's say you had a scene called Dusk that required the color swatches to have more red in them. You would have created a palette style for each of your characters called Dusk that had slightly redder colors. As your project evolves, you decide to drop the Dusk scene completely. Because you don't really need the Dusk palette style anymore, you can delete it from the palette.

Deleting a palette style from a palette does not affect any of the other styles in the set. However, the zones and line art in your drawing will now use the colors in the next available palette style.

To delete a palette style, follow these steps:

1. Select the palette style you want to delete from the **Style** drop list in the **Color Palette** tab.
2. Click the **Contextual Menu**  button and select **Style > Delete**.

Toon Boom Studio™ removes the selected style and its associated color swatches from the current palette and applies the swatch properties of the active style to the drawings that use them.

See Also

Swatches on page 179

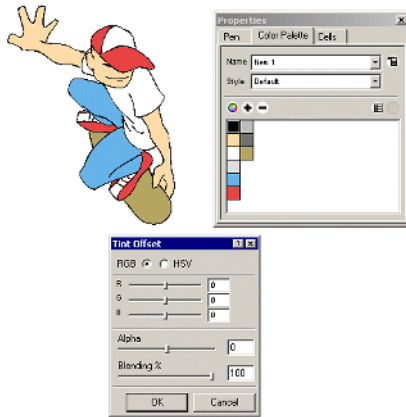
Creating Multiple Palette Styles on page 209

Renaming a Palette Style on page 210

Offsetting Colors in a Palette Style

Toon Boom Studio™ provides you with a powerful feature for tinting the color properties of all swatches in a palette style simultaneously.

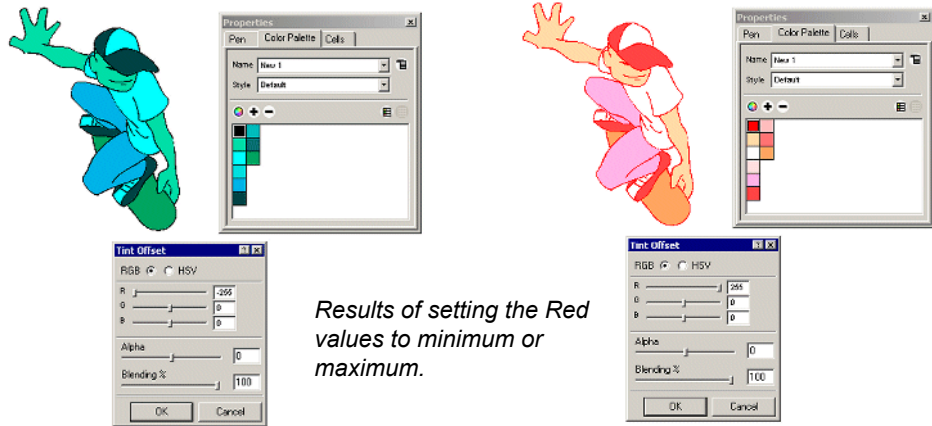
Using the Tint Offset dialog box you can add or subtract RGB/ HSV and Alpha (transparency) values from all of the swatches in a selected palette style to suit a specific situation. This eliminates the need to make time consuming individual adjustments to each swatch, removes the possibility of inconsistent results, and provides uniform color adjustment.



Normal settings before adjusting RGB/ HSV and Alpha (transparency) values.

Changing the offset properties adjusts the color properties of the swatches in the current palette style.

For example, you can increase the amount of red in a palette, which makes reds redder and blues more purple.



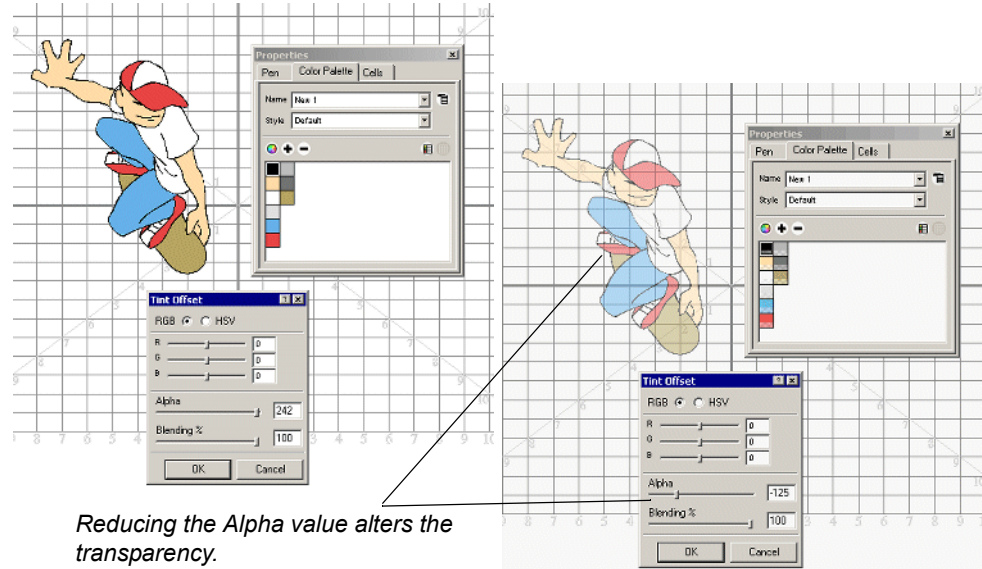
If you want to mix a new color into a palette style, you must use the Tint Blend dialog box.

To tint all of the colors in a palette style, follow these steps:

1. Select the palette and the palette style you want to modify from the **Color Palette** tab.
2. Click the **Contextual Menu** button and select **Style > Tint Offset**. The **Tint Offset** dialog box opens.
3. Select the type of adjustment you want to make to the palette style. You have two choices:
 - **RGB**: adjusts the Red, Green, and Blue values in the current palette.
 - **HSV**: adjusts the Hue, Saturation, and Value values in the current palette.
4. Using the sliders/fields, adjust the **RGB** or **HSV** values in the current palette.

As you make adjustments in this dialog box, the swatches in the current palette style change as well as the drawings that use those swatches, but the changes only become permanent when you click OK.

You can also use the **Alpha** slider/field to adjust the amount of transparency in the current palette style colors.



5. Use the **Blending** slider to change the intensity of the current **RGB/HSV** and **Alpha** values by a selected percentage.
6. Click **OK** when done.

See Also

Swatches on page 179
Creating Multiple Palette Styles on page 209
Blending a Color into a Palette Style on page 215


Blending a Color into a Palette Style

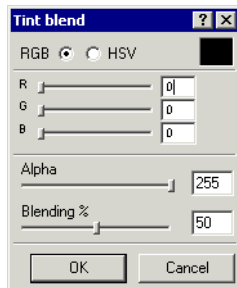
You can use the Tint Blend dialog box to blend a specific amount of a selected color into the swatches in a palette style.

For example, if a character is standing close to a fire, blend orange into the character's palette style to show the firelight reflecting off the character's body and clothing.

The difference between tint blend and tint offset is that when you use the Tint Offset command, you are increasing or decreasing the existing RGB/HSV/Alpha values of the swatches in a palette style. The Blend command add a new color into all the swatches in the palette style.

To blend a selected color into the selected palette style, follow these steps:

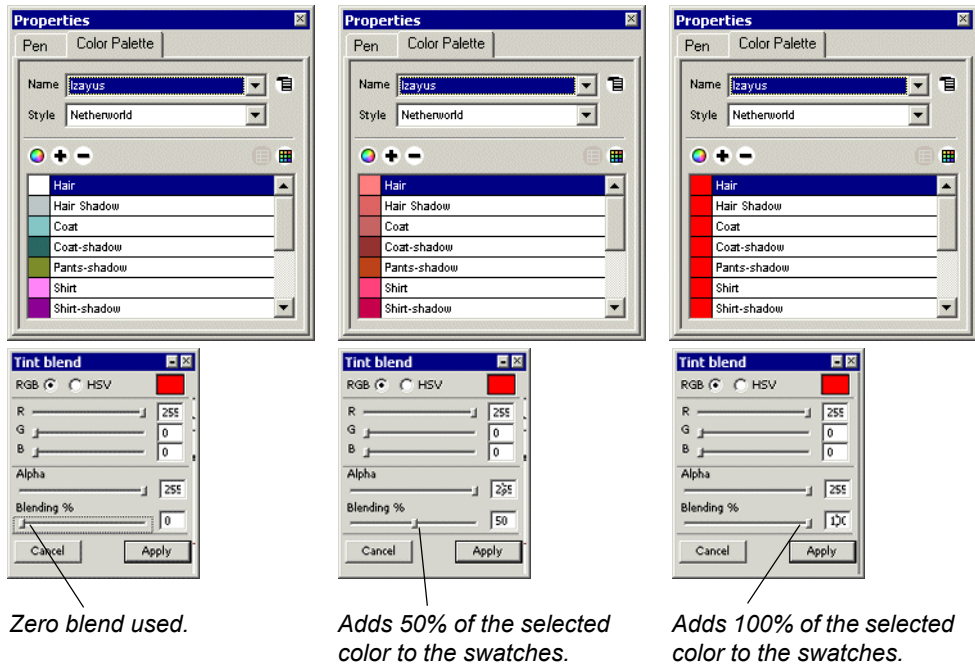
1. Select the palette and palette style you want to modify from the **Color Palette** tab.
2. Click the **Contextual Menu**  button and select **Style > Tint Blend**. The **Tint Blend** dialog box opens.



3. Select the type of adjustment you want to make to the palette style. You have two choices:
 - **RGB**: adjusts the Red, Green, and Blue values in the current palette.
 - **HSV**: adjusts the Hue, Saturation, and Value values in the current palette.
4. Use the **RGB/HSV** sliders and the **Alpha** slider/field, select the type of color you want to mix with the current palette style.

As you make adjustments in this dialog box, the swatches in the current palette style change as well as the drawings that use those swatches, but the changes only become permanent when you click OK.

5. Use the **Blend** slider/field to select the percentage of the blend color you want to add to the current palette style.



6. Click **OK** to permanently blend the selected color into the swatches in the current palette style.

See Also

Swatches on page 179
Creating Multiple Palette Styles on page 209
Offsetting Colors in a Palette Style on page 212

Chapter 6

Adding Sound

This chapter explains how to add sound tracks to your movie. It also explains how to automatically generate a lip assignment chart.

This chapter contains the following topics:

- Importing Sounds on page 218
- Editing Sounds on page 222
- Creating Lip Charts Automatically on page 230

Importing Sounds

When you decide that you want to add sound to your movie, you must first prepare this sound outside **Toon Boom Studio™**. Then in **Toon Boom Studio™**, you must add a Sound element, which organizes sound files in your animation.

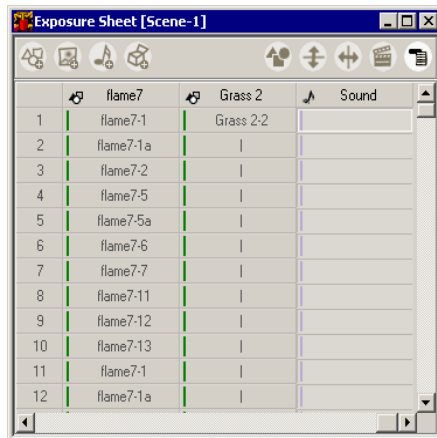
A sound will play in the movie until it reaches the end of the file or a stop frame you create in the Sound Element Editor. If the sound extends into multiple scenes it will keep playing.

You can import as many sound files as you like, just be sure to consider the constraints of your audience if you will be delivering your movies over the Internet - the more sounds you add, the larger the file size of your final movie.

Toon Boom Studio™ import, exports and plays sounds using QuickTime®. **Toon Boom Studio™** only supports the sound formats recognized by QuickTime®, with one exception: Flash ADPCM format, which we support natively.

To import sound to your scene, follow these steps:

1. Select **Element > New > Sound**. An empty sound element appears in the Exposure Sheet window and Timeline window.



2. In the Exposure Sheet window, right-click the cell at the frame number where you want the sound to start playing and select **Import Sound > From file** from the pop-up menu. The **Open** dialog box opens.

3. Select the sound file you want to use in your scene and click **Open**.

If the sound file doesn't already exist in your animation, **Toon Boom Studio™** copies the file from its present location to the **Sound** folder in your animation set folder.

The sound file now appears in the cell you selected. The entire name of the file appears in the cell, so you should try to keep the file name short so you can see it easily in the cell.



You can also import sounds in the Sound Element Editor.

1. Select the sound element and select **Element > Edit Sound**. The **Sound Element Editor** opens.
 2. Right-click an empty spot in the **Sound Element** panel and select **Import Sound** from the pop-up menu. The **Open** dialog box appears.
 3. Select the sound you want to import and click **OK**.
-

See Also

Editing Sounds on page 222

Renaming Elements on page 379

Creating Lip Charts Automatically on page 230

Event and Stream Sounds

You can set up your sounds to be either stream or event sounds when they are exported to the Macromedia® Flash™ format.

There are two major distinctions between event and stream sounds in the Macromedia® Flash™ file:

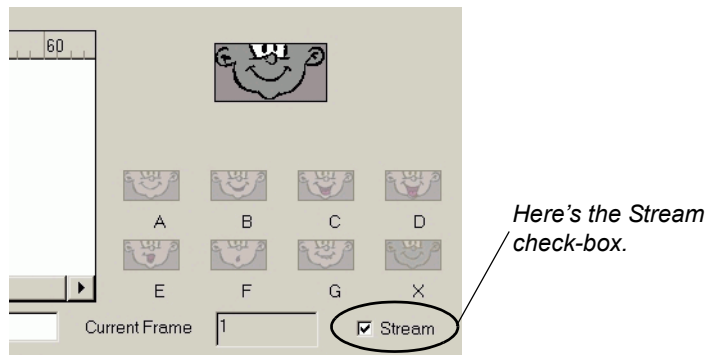
- Downloading
 - ⇒ Event sounds are downloaded by the Macromedia® Flash™ player before they play.
 - ⇒ Event sounds are reusable. Once downloaded, the Macromedia® Flash™ player can play the sound repeatedly without downloading it again. This is not possible with streamed sound.
 - ⇒ Streamed sound plays as it arrives.

- ⇒ Streamed sound samples are broken into small bits and inserted between the video frame. This allows the Macromedia® Flash™ player to start to play before receiving the full sound track which is helpful for a long sound track (like background music).
- Synchronization
 - ⇒ Stream sounds are kept synchronized with the video by the Macromedia® Flash™ player. The player drops frames if necessary, for example, if the video renderer is too slow and falls behind the sound track.
 - ⇒ Event sounds are not synchronized with video. After a while, an event sound may fall out of sync with the video.

Because streamed sounds are more likely to be synchronized with the images in your animation, lip sync sounds should be set to stream. However, only one sound can be streamed at a time, if there are multiple sounds set to be streamed, **Toon Boom Studio™** chooses the one that will be streamed and the rest will be event sounds.

To stream the sounds in an element, follow these steps:

1. Select the Sound element and select **Element > Edit Sound**. The **Sound Element Editor** opens.
2. Select the **Stream** checkbox. This toggles on and off the streaming sound option. If the option is not selected, the sound is set as an event sound.



See Also

Editing Sounds on page 222

Playing the Sound in Your Animation

After you've added sounds to your scene, you can preview the scene with all the sounds in sync. This helps you make any adjustments necessary to keep your sound synchronized with the action in your scene.

To play sound only, follow these steps:

1. In the **Exposure Sheet** window, right-click on the cell containing the sound.
2. Select **Play** from the pop-up menu.
3. To stop the sound playback, right-click the same cell and select **Stop** from the pop-up menu.



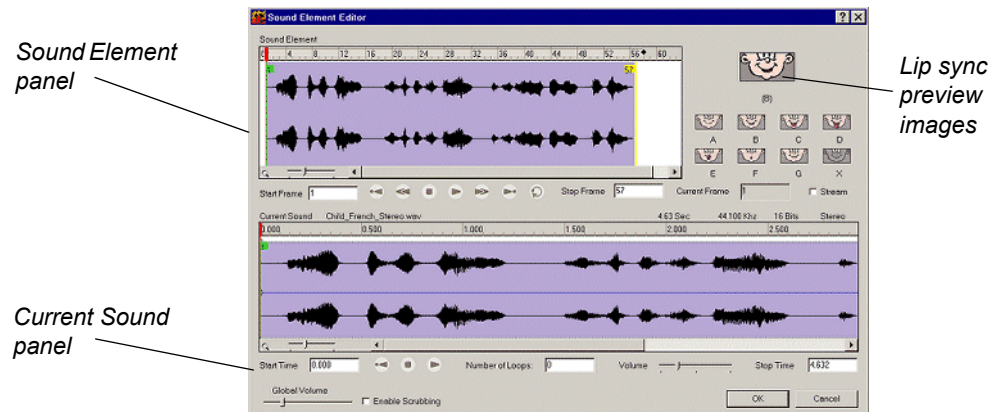
You can't use the Interactive Playback to playback the sound in a scene. Because the scene does not playback in real time, the sound would be out-of-sync with the action.

See Also

Creating Lip Charts Automatically on page 230
Editing Sounds on page 222
Real-Time Playback on page 431
Exporting to Flash on page 433

Editing Sounds

The Sound Element Editor makes it possible for you to edit sounds created outside of **Toon Boom Studio™** and imported into the movie.



The Sound Element Editor consists of three main elements.

- The Sound Element panel displays the waveform of all sound files in the element.
- The Current Sound panel displays the waveform of the selected sound so that you can edit its properties.
- The Lip sync preview images appear when you lip sync a sound.

In the Sound Element Editor, you can:

- Adjust the start frame/time of a sound.
- Cut sections from the start and end of the sound.
- Adjust the volume of a sound clip and create fade envelopes.
- Generate lip charts.
- Set the sound element to Stream or Event sound.

See Also

Creating Lip Charts Automatically on page 230

Changing the Lip Assignment of a Sound on page 231

Trimming the Start and End of a Sound File on page 224

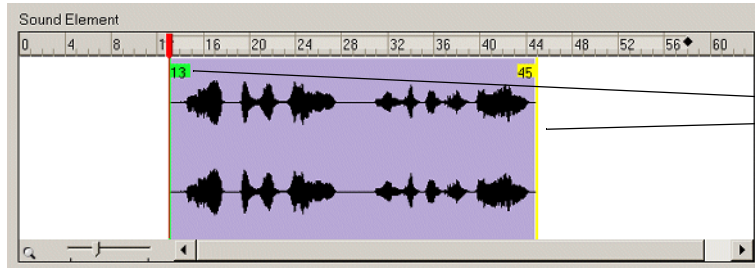
Fading the Sound In and Out on page 227

Changing the Start or End Frame of a Sound

To synchronize your sound with specific images in your animation, you must set a start frame. If you want to make sure the sound ends by a certain frame, you must set an end frame.

To change start or end frame of a sound, follow these steps:

1. Select **Element >Edit Sound**. The **Sound Element Editor** dialog box opens.
2. Select the sound you want from the **Sound Element** panel. To distinguish one sound file from another, check the frame numbers that appear above the sound waves or select a sound wave and click the **Play** button in the **Current Sound** panel (only the selected sound plays).
3. Using the **Sound Element** panel, drag the selected clip to the frame position where you want it to start playing.



The start and end frames appear in the green and yellow tabs.

You can only move the clip to a section that does not already contain a clip; you cannot overlap two clips in the same element.

4. To change the end frame, drag the yellow marker at the end of the waveform to the frame position.
5. To hear how all of the clips fit together in the element, click the **Play ►** button in the **Sound Element** panel.

If you only want to hear the selected clip, click the **Play ►** button in the **Current Sound** panel.

6. Click **OK** when done. The exposure sheet/timeline should now display the sound clip at the start frame you selected.

See Also

Importing Sounds on page 218

Creating Lip Charts Automatically on page 230

Fading the Sound In and Out on page 227

Changing the Lip Assignment of a Sound on page 231

Trimming the Start and End of a Sound File

If you want to play only a section of a sound file, you can use the Sound Element Editor dialog box to select the exact part you want to use.

For example, let's say there is a bit of noise at the start of the sound. You can use the Sound Element Editor to cut the noise at the start of the sound file.

The Sound Element Editor does not change the original sound file; it only plays a section of it, ignoring the rest. This allows you to reuse the full sound in other scenes in the movie. However, this means that the entire sound file is included on export. So if you must be considerate of file size, it is better to edit sound files completely in a sound editor before you bring them into **Toon Boom Studio™**.

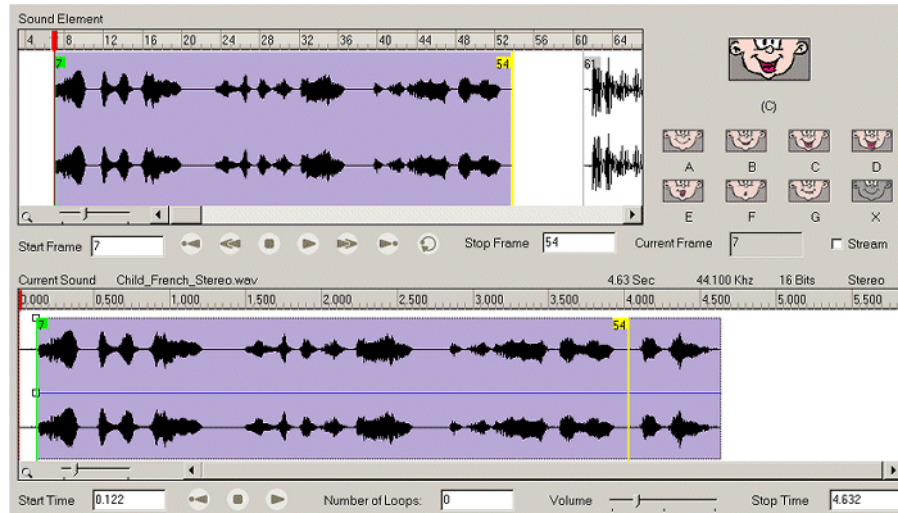
Toon Boom Studio™ does not change the sound to fit into the number of frames you select. If the number of frames you select is longer than the played sound, no sound is heard from that point on.

To select the section of a sound file to play in your scene, follow these steps:

1. Select the Sound element and select **Element > Edit Sound**. The **Sound Element Editor** dialog box opens.
2. Select the sound you want to work on from the **Sound Element** panel.

To distinguish one sound file from another, check the frame numbers that appear above the sound waves or select a sound wave and click the **Play** ► button in the **Current Sound** panel (only the select sound will play).

3. Using the **Current Sound** panel, you can decide which part of the file you want to play by dragging the left and right boundaries of the selection area.



See Also

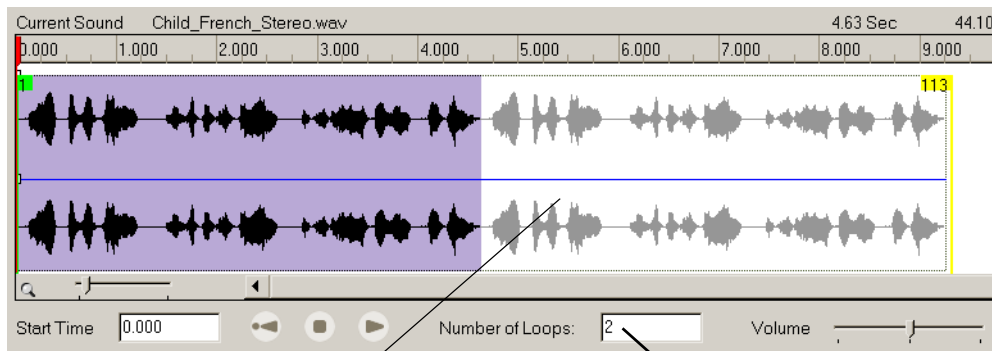
Importing Sounds on page 218
 Creating Lip Charts Automatically on page 230
 Fading the Sound In and Out on page 227
 Changing the Lip Assignment of a Sound on page 231

Looping a Sound

To repeat a sound, you specify the number of times you want it to loop in the Sound Element Editor.

To loop a sound, follow these steps:

1. Select the Sound element and select **Element > Edit Sound**. The **Sound Element Editor** opens.
2. From the **Sound Element** panel, select the sound file you want to loop.
3. In the **Current Sound** panel, type the number of time you want the sound to play in the **Number of Loops** field.
4. Click **OK** to close the dialog box.



The looped sounds appear washed-out to distinguish them from the original.

Enter the number of loops here.

When you loop a sound, the looped sections fill the frames in the Sound element until they encounter the next sound in the column, at which point the sound cuts out.

See Also

Importing Sounds on page 218

Creating Lip Charts Automatically on page 230

Fading the Sound In and Out on page 227

Trimming the Start and End of a Sound File on page 224

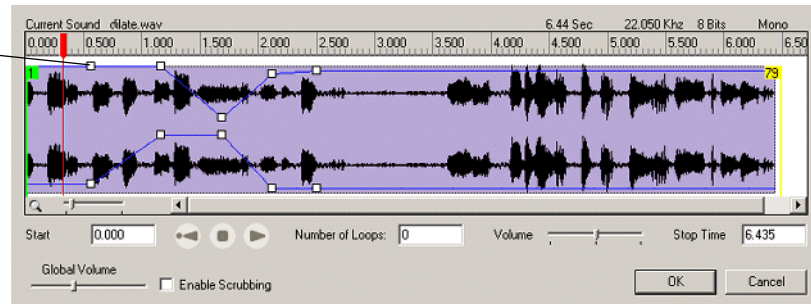
Fading the Sound In and Out

You can modify the volume throughout a sound clip by adjusting the fade-in and fade-out times; these are also known as envelopes. When you play the sound clip the volume adjusts over time to fade the sound. The fades only affect the playback; the original sound file is not affected.

To adjust the fade in/out effect on a sound clip, follow these steps:

1. Select the Sound element and select **Element > Edit Sound**. The **Sound Element Editor** dialog box opens.
2. In the **Sound Element** panel, select the sound you want to work on. A more detailed version of the selected sound appears in the **Current Sound** panel.
3. In the **Current Sound** panel, click the waveform to add an envelope marker.
4. Drag the envelope markers to adjust the volume at each frame and the time of the transition. The line from the edge of the clip to the envelope marker identifies how the volume either increases (fades-in) or decreases (fades-out) over time.

Envelope marker



You can also adjust the volume (mix) sound in the Sound Element Editor.

1. In the Sound Element panel, select the sound whose volume you want to adjust.
2. In the **Current Sound** panel, drag the volume slider to the new level.

See Also

Editing Sounds on page 222
 Trimming the Start and End of a Sound File on page 224
 Sound Scrubbing on page 235


Viewing the Waveform in the Exposure Sheet

When you insert a sound file in your sound element and activate the Thumbnail view, the sound element displays a waveform to represent the sound file. The waveform represents the sound as it rises and falls in volume. If there is no sound in the file, the waveform appears as a straight line.

You can use the waveform as a guide to determine when a certain sound effect occurs. For example, if you have a sound effect of a rooster crowing, you can analyze the sound's waveform to determine the initial "cock-a-doodle-doo" sound and sync it to the drawings of the rooster crowing.

If you look at the waveform of the sound effect, you'll notice the volume increases as the size of the waveform increases. You can use the size of the waveform as a guide to sync the sound effect with the action in your scene.

To view or hide the waveform of the sound element:

- Click the Toggle Thumbnails  button in the Exposure Sheet window.

There are two viewing modes that apply to sound columns when you activate the element thumbnails, depending on if you apply a Lip Sync function.

- **Lip Sync active:** the sound cells display the lip sync letter or a graphic.
- **Lip Sync inactive:** the sound cells display the file name or a waveform.



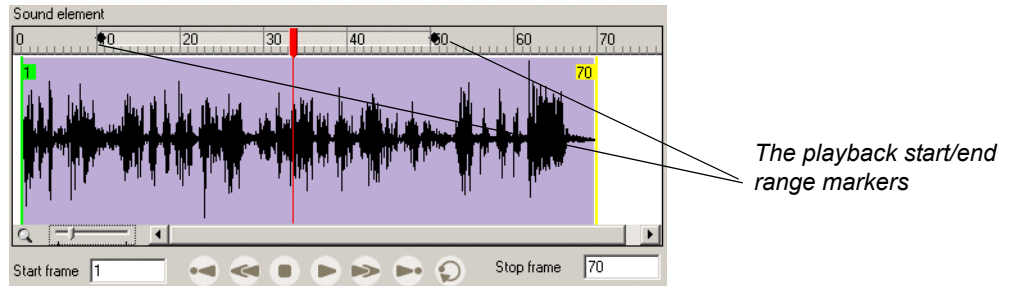
When a lip sync is applied to the cells in a sound element, you can no longer view the waveform or the file name. If you want to view its waveform again, right-click the sound cell and deselect the Show Lip Sync option in the pop-up menu.

See Also

Creating Lip Charts Automatically on page 230
Editing Sounds on page 222

Customizing the Playback Range

If you want to hear a specific section of the sound element, you can adjust the playback range in the Sound Element Editor to start or stop at specific frames. This customized playback range does not affect the actual sound in the Sound element.



To change the playback range in the Sound Element Editor dialog box:

- Drag the start or end range markers in the Sound Element panel to the boundary frames you want.

When you press Play ► to playback your sound in the Sound Element Editor, it only plays the sound that exists between the two markers.

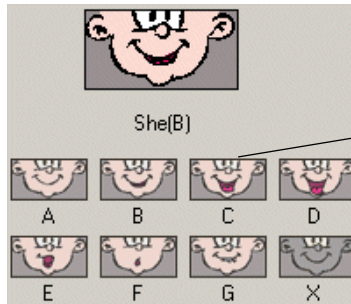
See Also

Editing Sounds on page 222

Creating Lip Charts Automatically

It can be a difficult task to shape a character's mouth so that it matches the sound at the right frame.

To solve this problem **Toon Boom Studio™** provides you with the Lip Sync feature which analyses the contents of a sound element and generates a lip chart based on the eight animation phonemes (A, B, C, D, E, F, G, and X, which represents silence). You can refer to the lip chart positions as you draw the shape of your character's mouth.



All the possible lip position graphics appear below the lip sync preview image in the Sound Element Editor dialog box.

To generate a lip chart for a sound, from the Exposure Sheet, follow these steps:

1. In the Exposure Sheet, right-click the sound cell you want to affect and select **Show Lip Sync** from the pop-up menu. A checkmark appears next to the command to show that it is active.

Toon Boom Studio™ analyzes the selected sound clips and assigns a lip sync letter to each sound cell. All the cells that have a sound file in them display a cartoon face that mimic the sound at that specific frame.

2. To show/hide the Lip Sync images that represent the lip position at each frame, click the **Contextual Menu** button and select **View > Thumbnails**.

To generate a lip chart for a sound, using the Sound Element Editor, follow these steps:

1. Select the Sound element and select **Element > Edit Sound**. The **Sound Element Editor** opens.
2. In **Sound Element** panel, right-click the waveform you want to generate the lip chart for.
3. 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 sound cell. Each lip chart image displays a letter which corresponds to the sound cell shown in the exposure sheet.

See Also

Viewing the Waveform in the Exposure Sheet on page 228

Changing the Lip Assignment of a Sound on page 231

Changing the Lip Assignment of a Sound

You can change the lip position assigned to a frame if you think another lip position would be more appropriate.

For example, let's say you have a character who says nothing for 10 frames inbetween two speeches. **Toon Boom Studio™** would normally assign an **X** image for the silence period.

If you want your character to let his mouth hang open in astonishment for these 10 frames, you could change the lip assignment for these 10 frames from an **X** to an **F**.

To change the lip assignment of a sound, follow these steps:

1. Right-click the cell that contains the lip position you want to change.
2. From the **Lip Sync** menu, select the letter that reflects the lip position you want to use for that sound.

Toon Boom Studio™ changes the lip chart to reflect the new lip assignment.

You can also change the lip assignment of a sound in the Sound Element Editor.

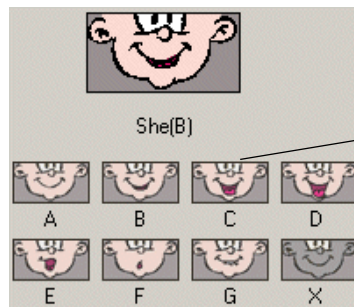
To change the lip assignment of a sound from the Sound Element Editor, follow these steps:

1. Select the Sound element and select **Element > Edit Sound**. The **Sound Element Editor** opens.
2. In the **Sound Element** panel, drag the frame slider to the frame you want to change the lip assignment on.

In the Lip Sync image area, the image on top represents the lip position assigned to the current frame.

3. To change the image assigned to the frame, click image of the lip position you want from below the preview image.

The preview image changes to the lip image you select.



All the possible lip position graphics appear below the lip sync preview image in the Sound Element Editor dialog box.

See Also

Adding Lip Sync Notes on page 233

Sound Scrubbing on page 235

Automatically Mapping Lip Sync Drawings on page 236

Adding Lip Sync Notes

To identify the different sections of your sound element, you can add lip sync notes to the lip chart.

Lip sync notes are not the same as cell or element notes. Lip sync notes appear directly in the sound element cell in the Exposure Sheet window.

Adding lip sync notes does not change the lip assignment at the frame.

To add lip sync notes to your sound element, follow these steps:

1. In the Sound element, double-click the sound cell you want to affect. The cell becomes editable.
2. Type the note text you want to appear with the lip sync image and press [Enter]. The next cell becomes editable.

If you don't want to edit the next cell, click outside of the cell. If you want to cancel the note change, press [Esc].

The lip sync note appears in the sound element in the **Exposure Sheet** window and appears in the **Sound Element Editor**.

See Also

Editing Sounds on page 222

Adding Element/Cell Notes on page 360

Automatically Mapping Lip Sync Drawings on page 236

Changing the Lip Assignment of a Sound on page 231

Recomputing the Lip Chart

When you generate the lip chart for a sound in a sound element, you can either accept the lip positions assigned by **Toon Boom Studio™** or assign your own lip sync images.

However, if you change the sound's start frame or reassign its lip position, you can use the **Recompute lip sync** command to reanalyze the sound and regenerate the lip chart for it. The command remains dimmed until you change the start frame or the assigned lip position.

To recompute the lip chart for a selected sound, follow these steps:

1. Right-click the sound in the **Sound element**
2. Select **Recompute lip sync** from the pop-up menu.



Regenerating the lip chart erases any customized assignments you make.

See Also

Creating Lip Charts Automatically on page 230

Adding Lip Sync Notes on page 233

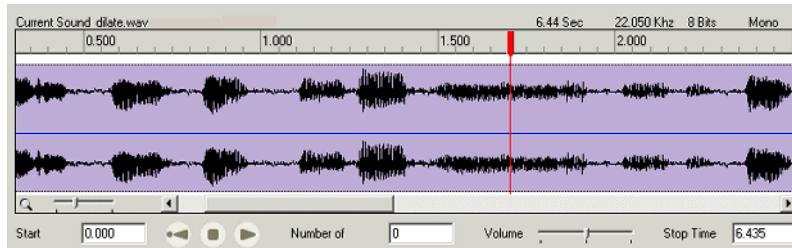
Automatically Mapping Lip Sync Drawings on page 236

Sound Scrubbing

Toon Boom Studio™ uses a process known as Sound Scrubbing to let you hear sound in real-time while you move the playback pointer forward or backwards. This is very useful for fine tuning the lip sync process.

To scrub a sound, follow these steps:

1. Select the Sound element and select **Element > Edit Sound**. The **Sound Element Editor** opens.
2. In the **Sound Element** panel, select the waveform you want to scrub.
3. Below the **Current Sound** panel, select the **Enable Scrubbing** option. This option sets the red markers in scrub mode.



4. Drag the red playback marker and hold the left mouse button down. The sound plays back at a speed relative to the distance from the initial position of the slider and the mouse pointer.

You can play the sound forwards or backwards by moving the mouse pointer in the opposite direction.

5. To stop the playback, release the mouse button.

See Also

Creating Lip Charts Automatically on page 230

Changing the Lip Assignment of a Sound on page 231

Trimming the Start and End of a Sound File on page 224

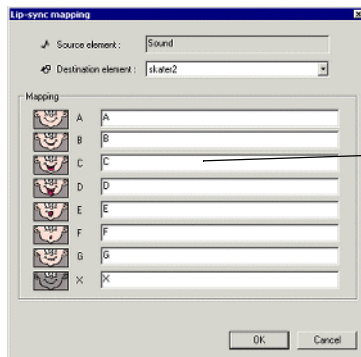
Fading the Sound In and Out on page 227

Automatically Mapping Lip Sync Drawings

Toon Boom Studio™ can automatically map drawings in an element to the lip chart you generated on a sound. This can save you lots of time when you are lip syncing a voice track. 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 automatically map lip sync drawings to a lip chart, follow these steps:

1. In a lip-synced sound element, right-click the Sound element and select **Modify Lip Sync Mapping**. The **Lip sync mapping** dialog box opens.
2. From the **Destination element** drop-list, select the element that contains the lip positions for the character's voice track.
3. In the **Mapping** panel, type the drawing name in the field to the right of the phoneme it represents. If your drawings are already named with the phoneme letters, you don't have to do anything.



Type the drawing name in the field to the right of the mapping letter

This feature will save you even more time if you name your drawings with letters of the eight phonemes A, B, C, D, E, F, G, and X (represents silence).

4. Click **OK**. The dialog box closes. If you scroll through the element with the lip positions, you'll see that all of the lip drawings have been mapped to the phonemes in the voice track.



If you make any changes to the voice track, you must remap the drawings to the appropriate phonemes. The mapping is not updated automatically.

See Also

Creating Lip Charts Automatically on page 230

Changing the Lip Assignment of a Sound on page 231

Chapter 7

Laying Out Elements in 3D Space

This chapter explains some of the basic concepts of the 3D scene space and how you can use it to place and adjust your elements.

This chapter contains the following topics:

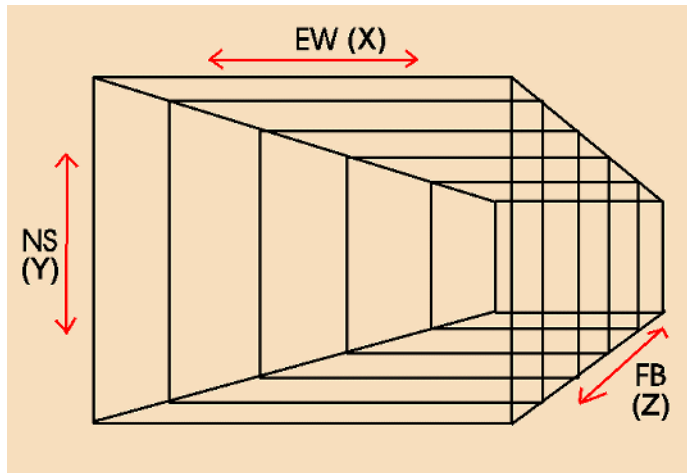
- **Basic Sceneplanning Concepts on page 238**
- **Repositioning Elements on page 245**
- **Scaling Elements on page 250**
- **Rotating Elements on page 255**

Basic Sceneplanning Concepts

Sceneplanning Mode adds a new dimension to the lay out process by allowing you to plan your 2D scenes in a 3D space.

The 3D space is described in terms of three planes:

- **EW**: maps the horizontal plane in terms of East and West, this is the **X** coordinate.
- **NS**: maps the vertical plane in terms of North and South, this is the **Y** coordinate.
- **FB** maps the depth of the plane in terms of Front and Back, this is the **Z** coordinate.



When you move, rotate, or scale your 2D elements in the 3D space, **Toon Boom Studio™** automatically applies the changes to all of the contents in the element.

To switch to Sceneplanning Mode:

- Select **View > Sceneplanning Mode** or click the **Sceneplanning Mode**  button.

See Also

Exposure Sheet and Timeline Windows on page 354

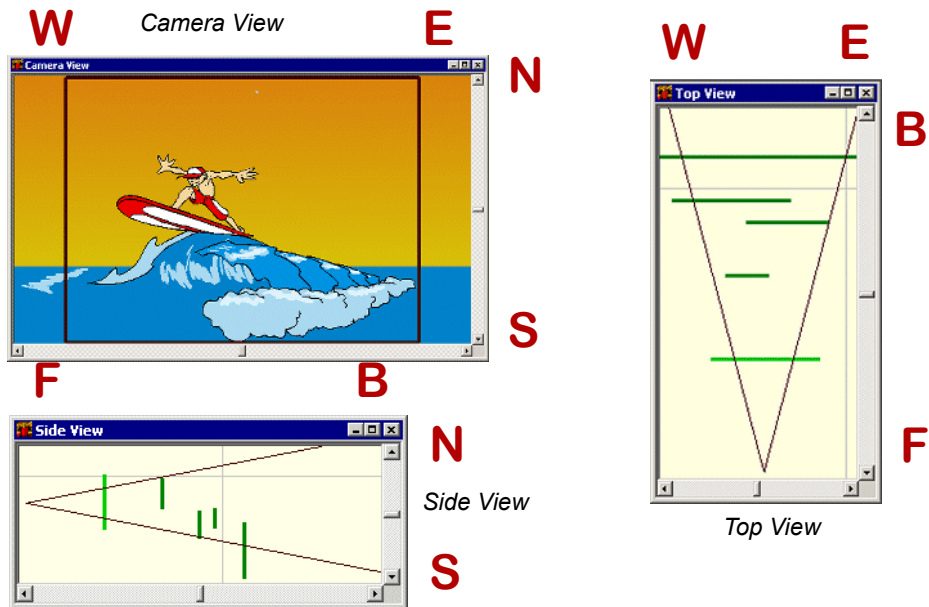
Selecting Elements on page 243

Using the View Windows

As you choreograph the elements in your scene, you need to be able to see where your elements appear in each frame of the scene.

Toon Boom Studio™ provides you with three windows that display your elements from three unique perspectives.

- **Camera View:** (default) displays the scene from the camera's perspective. Use this view to change an element's north, south, east, west, front, and back position, as well as its scale size, and rotation angle.
- **Top View:** displays the scene from a top-down view. Elements appear as lines (imagine looking at an animation cel from the top) and the camera field of view appears as an angle. Use this view to change an element's east, west, front, and back position.
- **Side View:** displays the scene from the side. Elements appear as lines (imagine looking at an animation cel from the side) and the camera field of view appears as an angle. Use this view to change an element's north, south, front, and back position.



You can use these View windows to place your elements in the scene and to map their actions over time. You can also use these windows to determine the size and position of the camera that records the action in your scene.

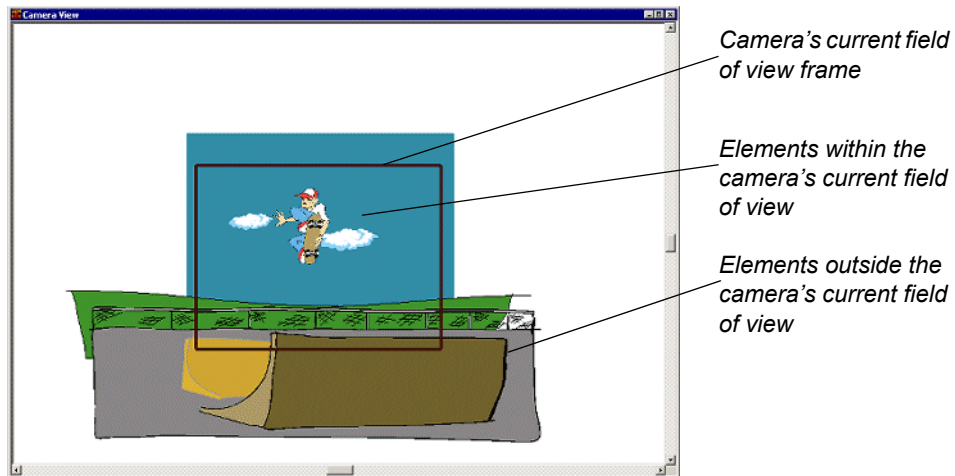
See Also

Zooming and Panning the View Window on page 164

Selecting Elements on page 243


Zooming and Panning View Windows

As you work with your elements in your View window, you may need to see other parts of the scene space not in the camera's field of view. Although all the action is taking place within the confines of the active camera's field of view, you can place other elements outside the camera to bring them in later when needed.




Changing the section of the viewable scene space doesn't actually change anything in the scene itself; it only changes what you are currently seeing in the View window.


To pan to another section of the scene space, you have these options:

- Select **Tools > Grabber** and use the **Grabber**  tool to pan the window. You can also activate the **Grabber** tool from the **Scene View** toolbar.
- Place the pointer in the **View** window and press [Spacebar]. When the pointer changes to a **Grabber**, you can click and drag the scene space around, making other parts of it visible.
- Use the scroll bars in the **View** window to scroll the scene space.

To zoom-in, you have these options:

- Place the pointer in the view window press the [X] key on your keyboard.
- Select **View > Zoom In**.
- Select **Tools > Zoom** and click the area you want to zoom-in by clicking the **Zoom**  tool.

To zoom-out, you have these options:

- Place the pointer in the view window press the [Z] key.
- Select **View > Zoom Out**.
- Press [Alt] and then click the View window with the **Zoom**  tool.

See Also

Resetting the Scene View on page 242

Switching the Active View in Sceneplanning Mode on page 241

Repositioning Elements on page 245

Switching the Active View in Sceneplanning Mode

If you zoom or pan across your View window, you can switch back and forth between the current view and a second view set up.

To switch the active view in Sceneplanning Mode, you have these options:

- Select **View > Switch Active View**.
- Press the [B] key on your keyboard to toggle between the views.

See Also


Using the View Windows on page 239

Zooming and Panning View Windows on page 240

Resetting the Scene View

If you change the focus of the View window to view other parts of the scene space, you may want to return to the default view, which is based on the camera size and position.



To reset the view focus, you have two choices:

- Select **View > Reset Zoom** to return to the default zoom value.
- Select **View > Reset View** or click the **Reset View**  button in the **Scene View** toolbar to reset your view to the position of the camera and the size of the window.

This option allows you to have a better idea of what the active camera is viewing in the scene.

- Click the **Recenter View**  button to reset your view to the center of the active camera.

The view in the current **View** window recenters itself based on the camera position, but it does not reset the zoom level

The **Top** and **Side View** windows use a fixed viewpoint in the center marked by a cross. When you click the **Reset View**  button or the **Recenter View**  button, **Toon Boom Studio™** resets the windows to that fixed position, no matter where the camera is located in the scene space.

See Also

Using the View Windows on page 239

Zooming and Panning View Windows on page 240

Selecting Elements

When you're ready to start choreographing your scene, you need to be able to select the elements you want to change.

You can select elements in the:

- Camera View, Top View and Side View windows
- Timeline window

All the images at the current frame appear in full-color in the Camera View window. A selected element appears highlighted.

How you select your element depends on the type of change you want to make:

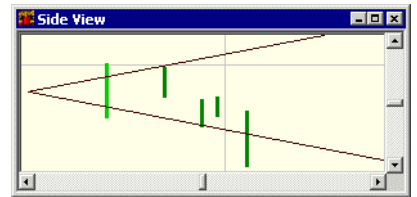
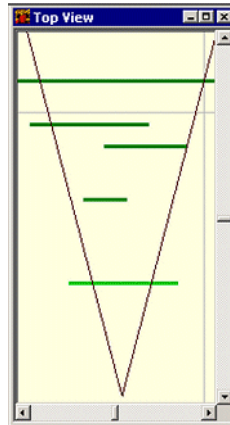
- Single element
- Multiple elements

To select a single element in the Camera View, Top View or Side View windows, follow these steps:

1. Select **Tools > Select** to activate the **Select** tool.
2. Click the element. The selected element appears highlighted in all the **View** windows and the **Timeline** window.

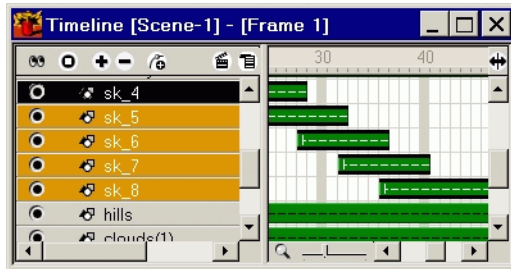


Selected elements and their relative positions in the View windows



To select multiple elements in the Timeline window, follow these steps:

- [Shift]+click the element names in the **Timeline** window. You can then change their scene timing, layer order, and attach/detach them from pegs.



- To select all the elements, select the **Timeline** window and select **Edit > Select All**.
- To deselect all the elements, select **Edit > Deselect All** or simply click the **Select** tool in an empty space in the **Camera View**, **Top View**, **Side View**, or **Timeline** windows.

See Also

Exposure Sheet and Timeline Windows on page 354

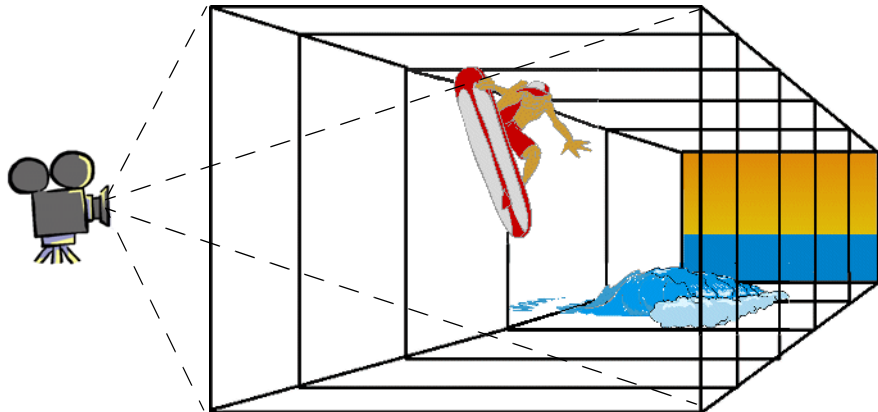
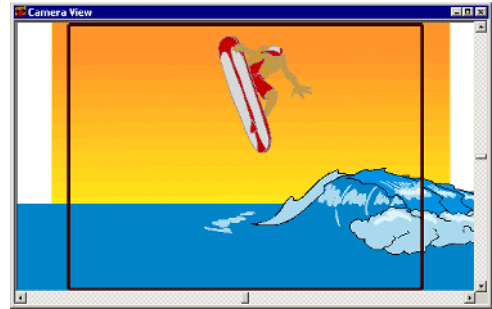
Adding Pegs and Attaching Elements to Pegs on page 261

Repositioning Elements

When you first load a scene in the Sceneplanning Mode, all of your elements appear as they were drawn in the Drawing View window with the initial position of zero fields NS, zero fields EW, and zero fields FB within the 3D scene space.

Using the EW (X), NS (Y), and FB (Z) coordinates you can place your elements at different distances in depth from the camera and from each other, adding a three dimensional effect to your two dimensional animation.

This is what you see in the Camera field of view.



Camera View window displays the NS/EW/FB offset positions, but you can also use the Side View and Top View windows to reposition elements:

- **Top View window:** displays the EW and FB positions.
- **Side View window:** displays the NS and FB positions.

Changing an element's position affects all the contents in that element. If you want to change an element's properties over time, you need to attach it to a peg.

See Also

Changing the NS/EW Position of an Element on page 246

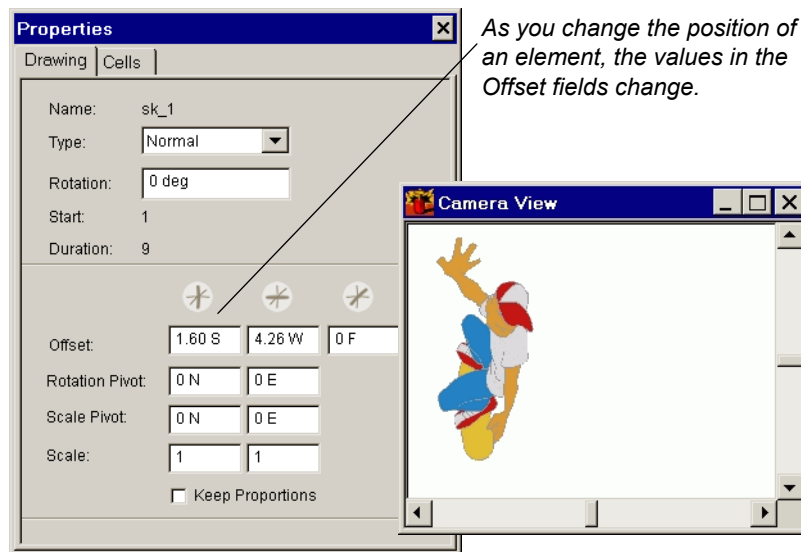
Changing the FB Position of an Element on page 248

Defining an Element's Layering Order on page 249



Changing Elements Over Time with Pegs on page 260

Changing the NS/EW Position of an Element

You can use the Camera View window or the Properties tab to change the NS/EW position of an element.



To change the NS/EW position of an element, follow these steps:

1. Select the element you want to reposition using one of the following methods:
 - Select the element in the **Timeline** window.
 - Select **Tools > Select** or click the **Select**  tool on the **Scene Operation** toolbar and click the element in the **Camera View** window.
2. To change the NS/EW position, you have the following choices:
 - To use the mouse to change the NS/EW position, move the pointer over the element so that it changes to  and drag the element to its new position.
 - To nudge selected elements, you can also use the arrow keys. Press [Shift] if you want to move the element in larger increments.
 - To use an exact NS/EW position, type the values in the first **Offset** fields in the **Properties** dialog box (select **Window > Properties**).
 - ⇒ To change the NS position, type the offset value in the left field followed by its direction (N for north or S for south).
 - ⇒ To change the EW position, type the offset value in the right field followed by its direction (E for east or W for west).

See Also

Selecting Elements on page 243

Changing the FB Position of an Element on page 248

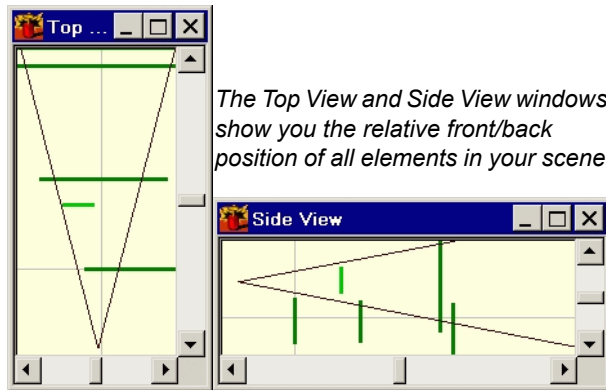
Defining an Element's Layering Order on page 249

Showing/Hiding Elements on page 355



Zooming and Panning View Windows on page 240

Changing the FB Position of an Element

You can change the FB position of an element visually in the Top View or Side View windows. You can also use a keyboard shortcut and change the FB position of elements in the Camera View window. All changes to the position of an element appear in the Properties window for the element.



To offset the FB position of an element, follow these steps:

1. Select the element you want to reposition using one of the following methods:
 - Select the element in the **Timeline** window.
 - Select **Tools > Select** or click the **Select** tool on the **Scene Operation** toolbar and click the element in the **View** window.
 2. To offset the FB position, you have the following choices:
 - In the Top View or Side View window, move the pointer over the element so that it changes to  and drag the element to its new position.
 - In the Camera View window, you can use the mouse to change the FB position of the element. Move the pointer over the element and press [Alt] so that it changes to an up/down arrow . Drag the element to its new position.
 - ⇒ Dragging the mouse upwards moves the element backward in space.
 - ⇒ Dragging the mouse downwards moves the element forward in space.
- If you open the **Properties** dialog box (select **Window > Properties**), you can see the FB position value in the last **Offset** field.

- To use an exact FB position, make sure the **Properties** dialog box is active (select **Window > Properties**) and type the values in the last **Offset** field. Type the Front/Back value in the last field followed by its direction (F for forward or B for backward).

See Also

Zooming and Panning View Windows on page 240
Selecting Elements on page 243
Changing the NS/EW Position of an Element on page 246
Defining an Element's Layering Order on page 249
Showing/Hiding Elements on page 355

Defining an Element's Layering Order

To make an element appear in front of or behind all the elements in your scene, you can tag that element as either a Foreground or Background element.

For example, if you have a background image, you can tag the element as a Background element and **Toon Boom Studio™** will always place it behind all the other elements, even if another element's Front/Back position places it behind the background element.

To select the element type, follow these steps:


1. Select an element in either the **View** windows or the **Timeline** window.
2. Select the element type from the **Type** drop-list in the **Properties** window (select **Window > Properties** to display this window). You have the following choices:
 - **Normal** (default): the layer order is determined by the order of the elements in the **Timeline** window and its Front/Back position.
 - **Foreground**: this type of element will always appear in front of other elements no matter what their Front/Back position is.
 - **Background**: this type of element will always appear behind other elements no matter what their Front/Back position is.

When you have two or more Foreground/Background elements, their order in the **Timeline** window determines their final layer order.

See Also

Selecting Elements on page 243
Changing the NS/EW Position of an Element on page 246
Changing the FB Position of an Element on page 248

Scaling Elements

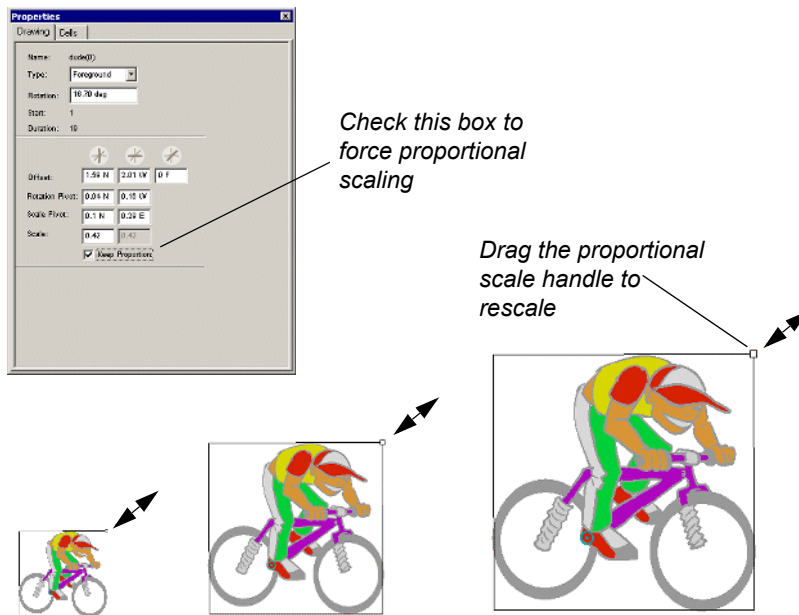
When you open your elements for the first time in Sceneplanning Mode, the images appear at their original size (as set in Drawing Mode). You can change an element's height and width using the Scale  tool in Sceneplanning Mode, which resizes all of the contents in the selected element.

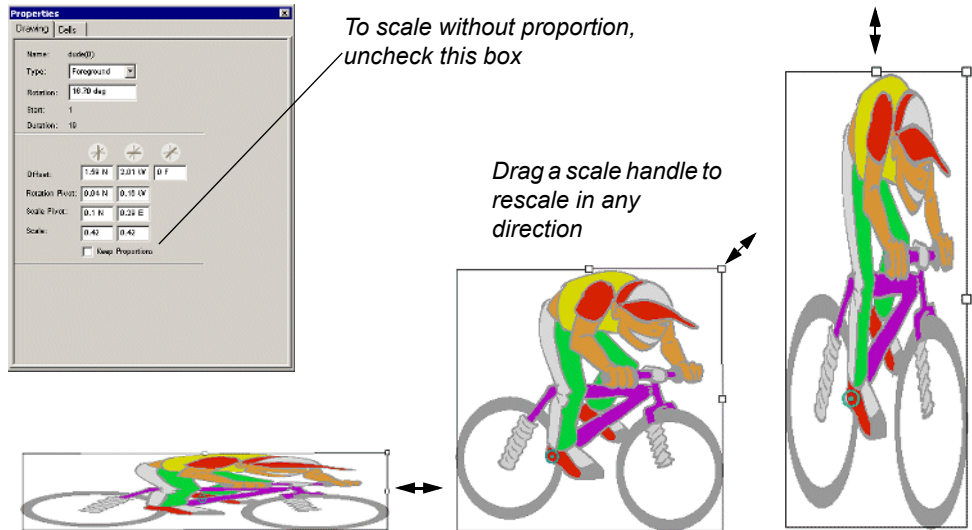
Scaling an element is not the same as moving it closer to the camera, although the effect is similar. When you move an element closer or farther away from the camera, it's size seems to change, but it's an illusion.

You can scale an element by:

- dragging the scale handles
- entering specific values

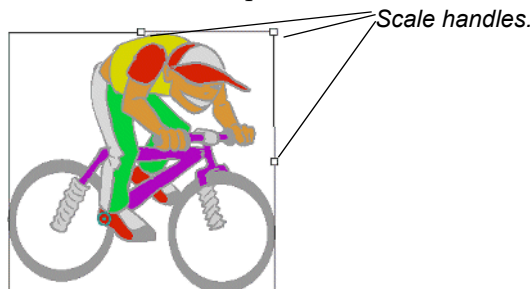
To see a change in the element's size, make sure the Camera View is active.





To scale an element using the scale handles, follow these steps:

1. Select the element you want to scale using one of the following methods:
 - Select the element in the **Timeline** window.
 - Select **Tools > Select** or click the **Select** tool on the **Scene Operation** toolbar and click the element in the **View** window.
2. Select **Tools > Scale** or click the **Scale** tool in the **Scene Operation** toolbar. The scale selection frame appears around the element.
3. Place the mouse pointer over one of the scale handles.



4. Drag one of the scale handles in the direction you want to rescale.

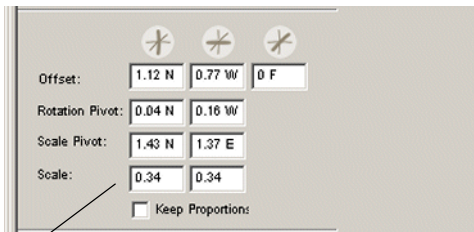
Dragging away from the element scales it up and dragging toward the element scales it down. If you drag the handles beyond the scale borders, the element's drawings flip over.

- ⇒ Top-right corner handle: changes the height and width values at the same time. If you press [Shift], you can rescale the element proportionally.
- ⇒ Top-center handle: changes the height value.
- ⇒ Side-center handle: changes the width value.

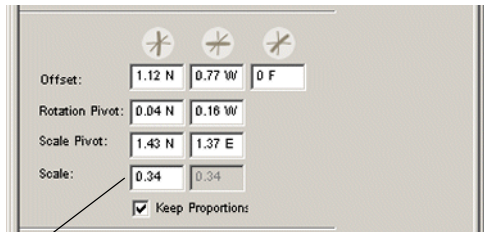
To change the size of an element over time, you must attach it to a peg.

To scale an element with specific values, follow these steps:

1. Select **Window > Properties** to open the **Properties** dialog box. You can see the size scale values change in the Scale fields.
2. Type the size values in the **Scale** fields in the **Properties** dialog box.



Scale fields



Proportional Scale

- ⇒ To change the height of the element, type the height value in the left **Scale** field.
- ⇒ To change the width of the element, type the width value in the right **Scale** field.
- ⇒ To change the height and width of an element proportionally, select the **Keep Proportions** checkbox. When you type one value in the vertical **Scale** field, **Toon Boom Studio™** adjusts the horizontal value automatically and the horizontal value field is greyed out.

See Also

Scaling Elements Over Time on page 297

Changing Elements Over Time with Pegs on page 260

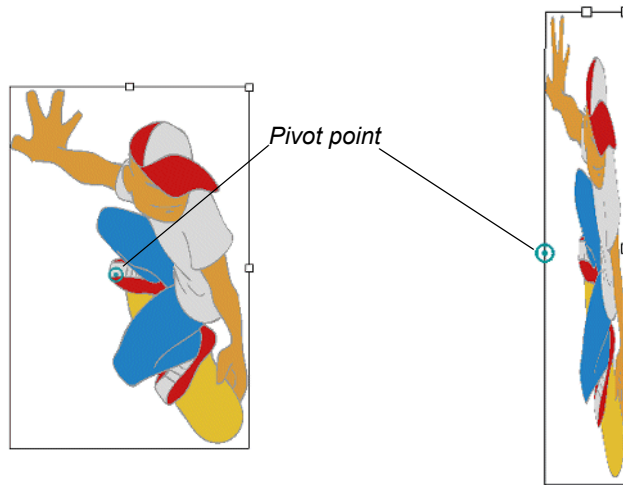
Showing/Hiding Elements on page 355

Changing the Scale Pivot Point Position

The scale pivot point allows you to change the center of the scaling.

For example, with the pivot point at the center of the scale grid (default), when you resize the element, all four sides can move in the direction you drag the resize handles. Only the centre of the drawing stays in place.

With the pivot point on the left middle-side, only the three opposite sides will move if you resize the object.




This can be useful if you want to resize an element, but you don't want to change its horizontal or vertical position in the scene.

You can move the scale pivot point by:


- dragging the scale pivot point
- entering specific values

To change the scale pivot point using the Scale tool, follow these steps:

1. Select the element using one of the following methods:
 - Select the element in the **Timeline** window.
 - Select **Tools > Select** or click the **Select** tool on the **Scene Operation** toolbar and click the element in the **Camera View** window.

2. Select **Tools > Scale** or click the **Scale**  tool in the **Scene Operation** toolbar. The scale selection frame appears around the element.
3. Select the pivot point and drag the pivot point to the position where you want to focus the scaling.
4. Scale the element as you wish using the resize handles.

To change the scale pivot point by entering specific values, follow these steps:


1. Select the element using one of the following methods:
 - Select the element in the **Timeline** window.
 - Select **Tools > Select** or click the **Select**  tool on the **Scene Operation** toolbar and click the element in the **Camera View** window.
2. Select **Window > Properties**. The **Properties** dialog box opens and the pivot point position values are displayed in the **Scale Pivot** fields of the element's tab.
3. Type the values in the **Scale Pivot** fields.
 - ⇒ To change the NS pivot point position, type the value in the left field, followed by its direction (N for north or S for south).
 - ⇒ To change the EW pivot point position, type the value in the right field, followed by its direction (E for east or W for west).

See Also

Changing the Pivot Point Over Time on page 303
Repositioning Elements on page 245
Selecting Elements on page 243
Repositioning Elements on page 245

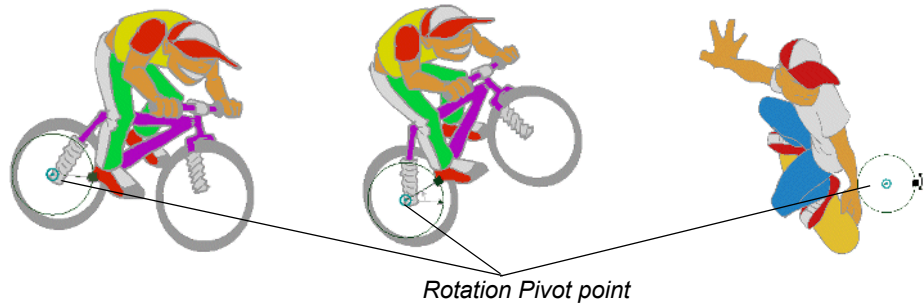
Rotating Elements

When you open your elements for the first time in Sceneplanning Mode, the images appear in the Camera View window at the angle drew them at in Drawing Mode.



You can rotate all of the contents in an element using the Rotate  tool in Sceneplanning Mode. The rotation can be as simple as changing the element's angle so it appears to move up or downhill, or as complex as a skateboarder performing acrobatics as he rotates through the air.

When you rotate an element, it rotates around the rotation pivot point. With the Rotate tool, you can even change the rotation pivot point, to create different rotation effects.

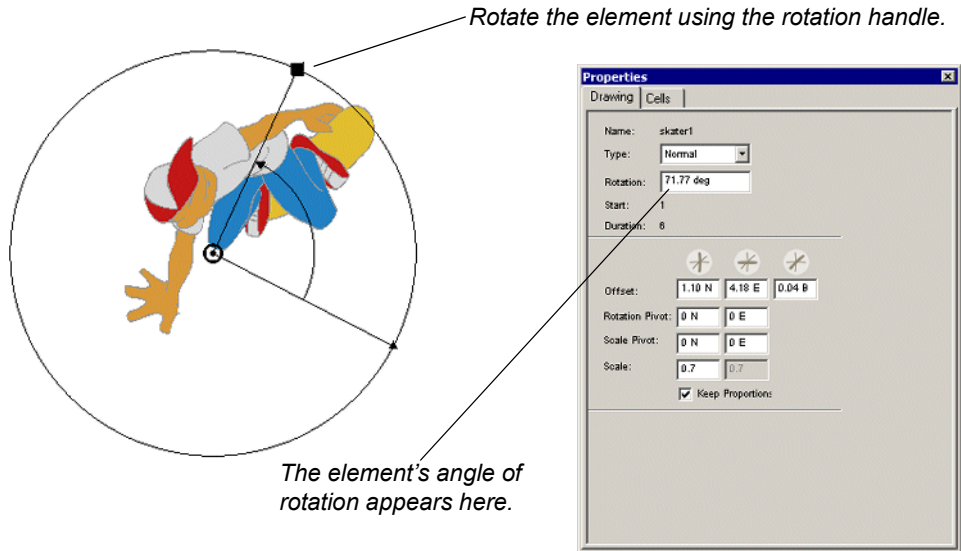
To rotate an element over time, you must attach it to a peg.



To rotate an element using the Rotate tool, follow these steps:

1. Select the element you want to rotate using one of the following methods:
 - Select the element in the **Timeline** window.
 - Select **Tools > Select** or click the **Select**  tool on the **Scene Operation** toolbar and click the element in the **Camera View** window.
2. Select **Tools > Rotate** or click the **Rotate**  tool in the **Scene Operation** toolbar. The rotation range appears on the element as a circle.
3. In the **Camera View** window, drag the rotation handle (on the outer ring) until the element is at the new angle.

As you change the element's angle of rotation, the value appears in the **Rotation** field of the **Properties** dialog box.



To rotate an element by entering specific values, follow these steps:

1. Select the element you want to rotate using one of the following methods:
 - Select the element in the **Timeline** window.
 - Select **Tools > Select** or click the **Select** tool on the **Scene Operation** toolbar and click the element in the **Camera View** window.
2. Select **Window > Properties**. The **Properties** dialog box opens and the pivot point position values are displayed in the **Rotation Pivot** fields of the element's tab.
3. Type the angle value in the **Rotation** field in the **Properties** dialog box.

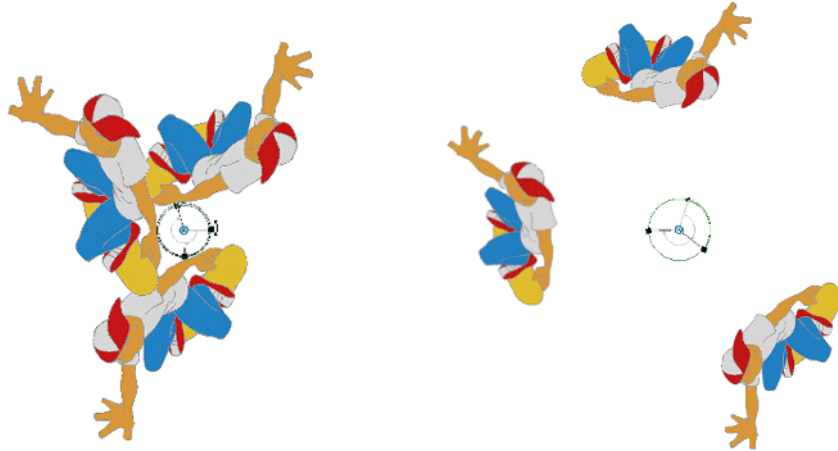
You can enter a negative value (to rotate to the left) or a positive value (to rotate to the right).

See Also

Selecting Elements on page 243
Repositioning Elements on page 245
Changing the Rotation Pivot Point Position on page 257
Rotating Elements Over Time on page 289

Changing the Rotation Pivot Point Position

You can use the rotation pivot point to change the center of rotation.



In these examples, you can see how the placement of the pivot point produces different rotation effects.

After you change the pivot point of an element, you can move the element to another position and **Toon Boom Studio™** maintains the relative position of the pivot point.


You can change an element's pivot point by:

- dragging the rotation pivot point
- entering specific values

To change the rotation pivot point using the Rotate tool, follow these steps:

1. Select the element using one of the following methods:
 - Select the element in the **Timeline** window.
 - Select **Tools > Select** or click the **Select** tool on the **Scene Operation** toolbar and click the element in the **Camera View** window.
2. Select **Tools > Rotate** or click the **Rotate** tool in the **Scene Operation** toolbar. The rotation range appears on the element.
3. In the **Camera View** window, drag the rotation pivot point in the center of the rotate range circle to its new position.

To change rotation pivot point by entering values in the **Properties** dialog box, follow these steps:

1. Select the element using one of the following methods:
 - Select the element in the **Timeline** window.
 - Select **Tools > Select** or click the **Select**  tool on the **Scene Operation** toolbar and click the element in the **Camera View** window.
2. Select **Window > Properties**. The **Properties** dialog box opens and the pivot point position values are displayed in the **Rotation Pivot** fields of the element's tab.
3. Type the values in the **Rotation Pivot** fields in the **Properties** dialog box.
 - To change the NS pivot point position, type the value in the left field, followed by its direction (N for north or S for south).
 - To change the EW pivot point position, type the value in the right field, followed by its direction (E for east or W for west).

See Also

Changing the Pivot Point Over Time on page 303

Selecting Elements on page 243

Repositioning Elements on page 245

Chapter 8

Moving, Rotating, and Scaling Over Time

This chapter explains how to use pegs to add motion, rotation, and scaling effects to elements in your movie.

This chapter contains the following topics:

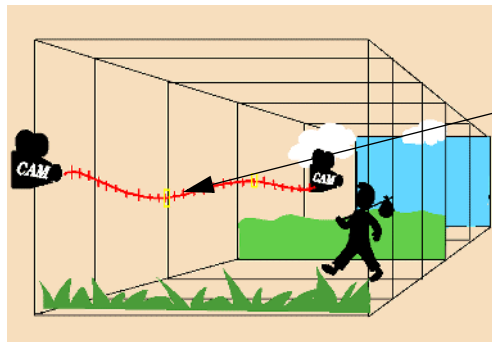
- **Changing Elements Over Time with Pegs on page 260**
- **Creating Motion Paths with Pegs on page 267**
- **Rotating Elements Over Time on page 289**
- **Scaling Elements Over Time on page 297**
- **Changing the Pivot Point Over Time on page 303**
- **Changing the Velocity of a Motion Path on page 287**
- **Working with the 1D and Function Editors on page 311**

Changing Elements Over Time with Pegs

Sceneplanning Mode puts many 3D computer animation tricks at your disposal so that you can select and move, rotate, or scale your 2D elements over time in a 3-dimensional space.

You use a special element called a Peg to transform your elements over time. With Pegs, you can change the position, rotation or scaling of an element. **Toon Boom Studio™** interpolates all changes to gradually transform your element over time.

You can attach Image or Drawing elements to a peg to change an object's position, size, or rotation over time and you can attach Cameras to Pegs to creating trucking, panning and zooms. You can also attach Pegs to Pegs to combine motion effects.



In this shot, a peg is used to create a motion path that the camera follows through the multiple planes in the scene.

To change entire elements over time, you must be in Sceneplanning Mode.

To switch to Sceneplanning Mode:

- Click the **Sceneplanning Mode**  button or select **View > Sceneplanning Mode**. If you are already in **Sceneplanning Mode**, the command in the **View** menu reads as **Drawing Mode**.

See Also

Basic Sceneplanning Concepts on page 238
Camera Effects with Toon Boom Studio on page 320
Adding Pegs and Attaching Elements to Pegs on page 261
Building Peg Hierarchies on page 265

Adding Pegs and Attaching Elements to Pegs

To change an element over time, you must attach the element to a peg. All elements attached to the peg inherit the effects you program in the peg.

To add a peg and attach an element to it, follow these steps:

1. Click the **Add Peg** button in the **Timeline** window. A 20 frame peg appears at the top of the element list.
2. Select the element you want to affect in the left-side of the **Timeline** window and drag it to the peg element.



In this example, we attached the Mikeant element to the Mikeant Motion Path peg.

As you drag an element onto a peg, the peg element becomes highlighted.

3. When the peg element becomes highlighted, release the mouse button. The selected element is now attached to the peg.



In this example we have two pegs and two elements attached to pegs. Notice:

- Attached elements are indented below the peg.
- You can use the arrow next to the peg to show/hide all of the elements attached to it.

4. To rename the peg, select the peg and select **Element > Rename**.

You must give the peg a unique name. You can include the name of the element it affects. For example, you could call the peg *Mikeant-walk*.



You can improve the display quality of pegs in the View windows by changing the **Smoothness** setting on the **Peg** tab. You must enable **Smooth Pegs** on the **Sceneplanning** tab of the **Preferences** dialog boxes to see changes to a peg's smoothness.

See Also

Showing/Hiding Elements on page 355

Repositioning Elements on page 245

Changing the Start Time and Duration of a Peg on page 262

Looping a Peg on page 264

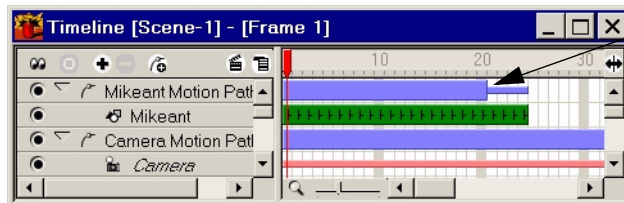
Configuring Video Card Display Options on page 52

Changing the Start Time and Duration of a Peg

The default duration for new pegs is 20 frames, starting at frame one. You can change the start time and duration of a peg to reflect the period that you want the peg to change attached elements.

Let's say that the exposure time for a walk-cycle of drawings is 24 frames. You drew the character walking in place, so you must create a motion path with a peg for your drawings to follow.

The duration of the peg element your cycle is attached is 20 frames only. If you did not change this, your character would appear to walk in place from frame 20 to 24. For your character to continue moving as he walks from frame 20 to 24, you must extend the duration of the peg by four frames, from frame 20 to 24.



This is the peg's trackbar, which you can use to change the start time and duration of the peg.

To change the start time of a peg:

- Click the peg's trackbar in the right panel of the **Timeline** window and drag the trackbar to the start time. You may want to use the zoom slider at the bottom of the **Timeline** window to see more or less of the timeline.
You can also right-click the peg, select **Change Start Frame** from the pop-up menu, type the frame number in the field, and click **OK**.

To change the duration of the peg:

- Move the pointer to the edge of the peg in the right panel of the **Timeline** window and drag the boundary to the left or right to increase or decrease the length of the peg. A peg must always be at least two frames in length.
You can also right-click the peg, select **Change Duration** from the pop-up menu, type the new length of the peg, and click **OK**.

If you add content or change the exposure of content that you have already attached to a peg and designed effects for, you will have to extend to the duration of the peg. However, if you just drag the peg's trackbar, frames will be added to the effect you created and the effect will just slow down, which might not be what you want.

With the Extend Peg command, you can change the duration of the peg without changing the effect (rotation, scaling, or motion) that you created. When you extend the peg, the key frames you created remain and new frames are added after what was the last frame in the original effect. **Toon Boom Studio™** adjusts the velocity of your effects based on the number of additional frames.

To extend a peg, follow these steps:

- In the **Timeline** window, use the red frame slider to select the frame you want to extend the peg to.
- Select the peg in the **Timeline** window, and select **Element > Cell > Extend Peg**. **Toon Boom Studio™** changes the duration of the peg and adjust all effects so that you maintain the effect that you created before you extended the peg.

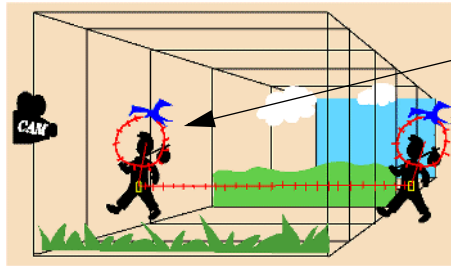
See Also

Exposure Sheet and Timeline Windows on page 354
Timing/Exposing Drawings and Images on page 401

Looping a Peg

If you want a peg to repeat an effect, you can loop the peg.

For example, if you had a scene with a boy walking across the stage with a bird circling his head, you would create a peg with a motion path of a single orbit for the bird. You would then loop the orbit motion path so that the bird would continue to circle the boy's head for the duration of his motion path.



If you want the bird to circle the boy's head following the same path, you would loop its peg so that it lasts as long as the boy's motion path.

Each time the loop restarts, it skips the first frame of the peg. Similar to a walk-cycle where the last step leads naturally to the first step in the cycle, this ensures the logical continuation of the looped action. Therefore, if you loop a 10-frame peg three times, the entire length of the peg will be 28 frames.

To loop a peg, follow these steps:

1. Right-click the peg bar in the right panel of the **Timeline** window and select **Change Loops**. The **Change Loops** dialog box opens.
2. Type the number of times you want to repeat the selected peg and click **OK**.

The peg now repeats itself for the number of loops you selected. After the first segment, the peg bar of the looped segments is grey.

See Also

Rotating Elements Over Time on page 289

Scaling Elements Over Time on page 297

Building Peg Hierarchies

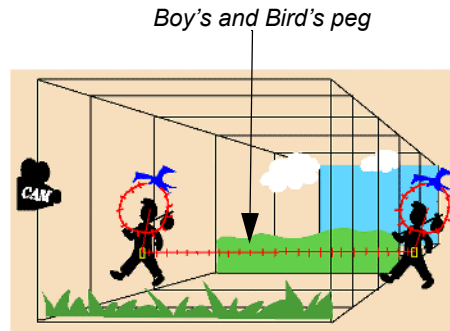
As you animate your characters and objects in Sceneplanning Mode, you will gradually create more complicated peg effects.

In the following example, we created a scene of a boy walking across a lawn with a bird flying in circles over his head. The primary action is the motion of the two characters across the scene. The bird has another secondary action, that of circling the boy's head.



To make sure the bird keeps pace with the boy, you would link the bird's circular motion peg to the boy's motion path.

Bird's peg

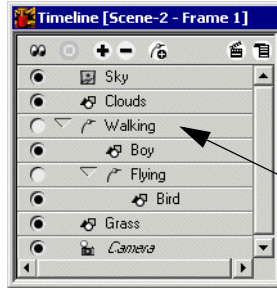


Boy's and Bird's peg

To achieve this effect, you must attach the bird and its peg to the boy's peg, building what we call a peg hierarchy. In this example, the bird's motion path is subordinate to the motion path of the boy.

To build the peg hierarchy in this example, follow these steps:

1. Link the Boy element to a peg that defines a horizontal motion path.
2. Link the Bird element to a peg that makes the bird fly in circles around the boy.
3. Link the Bird's peg to the Boy's peg so that the bird moves across the scene as it flies in circles around the boy.



The following elements make up the peg hierarchy from this scene:

- *The Boy element is attached to the Walking peg.*
- *The Bird element is attached to the Flying peg.*
- *The peg element is attached to the Walking peg.*

Notice how the attached elements are indented below Walking, the primary peg.


See Also

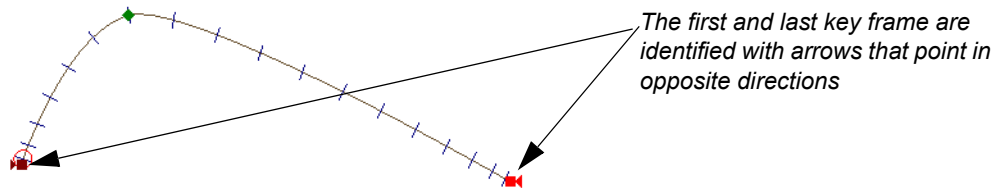
Exposure Sheet and Timeline Windows on page 354

Adding Pegs and Attaching Elements to Pegs on page 261

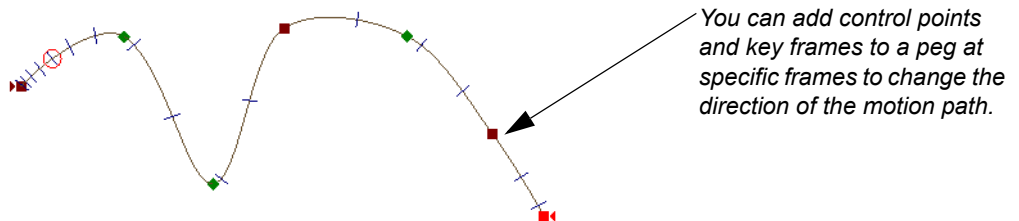
Creating Motion Paths with Pegs

When you add a peg to your animation, two key frames appear stacked on top of each other at the center point of the 3D scene space. The first key frame has an arrow that points right and the second key frame also has an arrow and it points left.

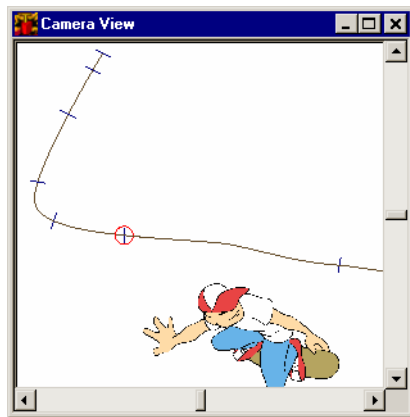
You can grab a key frame with the Motion  tool and drag it in any direction to create a motion path that goes in a straight line. When you create a motion path, you'll see that it is made up of a series of tick marks. Each tick mark represents a frame of time in the scene.



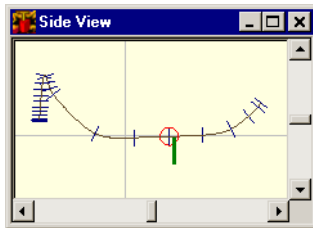
To shape a motion path and change the direction elements attached to the peg will move, you add control points and key frames and change their position. Remember that creating a complex motion path does not affect the final file size of your output.



Because of the 3D stage in Sceneplanning Mode, you can create motion paths that go from east to west, north to south, or front to back. When your character moves front to back on a motion path, **Toon Boom Studio™** automatically interpolates size changes as it moves closer to, or farther away from, the camera.

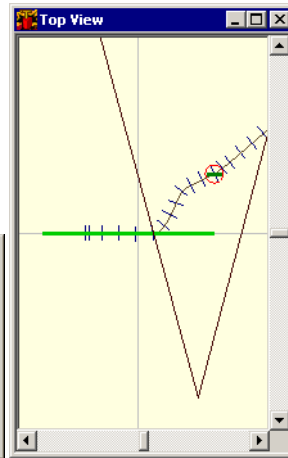


In the Side View window, you can map out the north/south and front/back position of the motion path.



The 3D stage windows were quite useful in designing the motion path of the skateboarder.

In the Camera View window, you can map out the east/west and north/south direction of the motion path.



In the Top View window, you can map out the front/back and east west direction of the motion path.



You can reposition pegs like you can change the position of most elements in the 3D space. When you reposition a peg, all elements attached to the peg also move. In addition, the values of points you add to your motion paths are based on the static position of the peg, plus the change in position to the motion point.

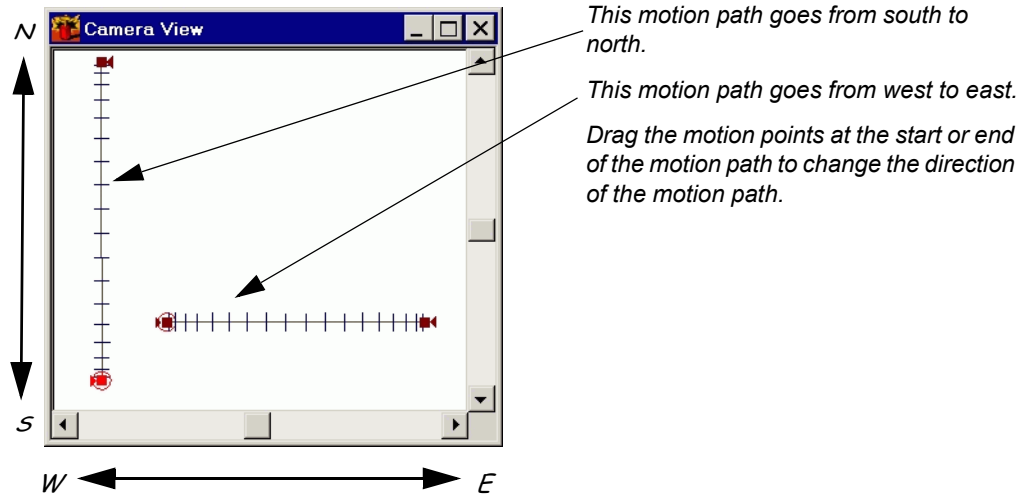
See Also

- Creating a NS or EW Motion Path on page 269
- Creating a FB Motion Path on page 271
- Adding Motion Points to a Motion Path on page 273
- Changing the Velocity of a Motion Path on page 287
- Adding Pegs and Attaching Elements to Pegs on page 261
- Repositioning Elements on page 245
- Showing/Hiding Elements on page 355

Creating a NS or EW Motion Path

Motion is essential to transform your drawings and images from still life pictures to animated movies.

In the Camera View window, you can stretch the peg to create a motion path that goes from north to south and east to west. All elements that are attached to the peg will follow the motion path of the peg.



To create NS and EW motion for a peg, follow these steps:

1. Click the peg's name in the **Timeline** window to select it. The peg appears in all **View** windows. You can hide other elements to make it easier to identify and modify pegs.
2. Select **Tools > Motion**. This activates the **Motion** tool.

3. In the **Camera View** window, drag the motion points at the beginning or end of the motion path to give the motion path a direction. Your mouse pointer becomes a four-headed arrow when you position it over a motion point that you can move.
 - Drag the motion points from left to right to create a path that goes from west to east.
 - Drag the motion points from top to bottom to create a path that goes from north to south.



When you are creating motion paths, elements linked to a peg may be offset from the motion path. This can make it difficult to visualize how an element will change position as it follows the peg.

You can display peg ghosts in the Camera View window to see the path that an element linked to a peg will follow. To display peg ghosts:

- Select **View > Peg > Show Peg Ghosts**.
-

See Also

Showing/Hiding Elements on page 355

Creating a FB Motion Path on page 271

Adding Pegs and Attaching Elements to Pegs on page 261

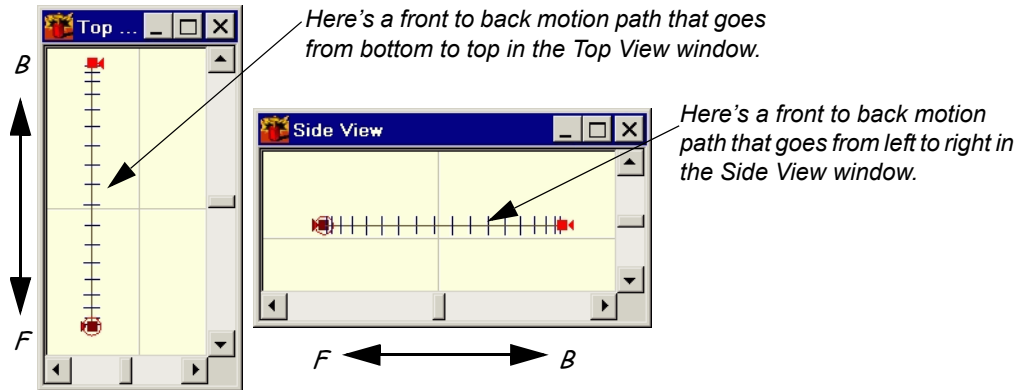
Changing the Start Time and Duration of a Peg on page 262

Changing Elements Over Time with Pegs on page 260

Creating a FB Motion Path

With the **Toon Boom Studio™** 3D scene space, you can create multiplane effects for elements by creating motion paths that go from the front to the back of the scene.

The Top View and Side View windows can help you visualize front/back (FB) motion. All elements appear as lines in the Top View and Side View.



To create FB motion, follow these steps:

1. Click the peg's name in the **Timeline** to select it. The peg appears in all **View** windows. You can hide other elements to make it easier to identify and modify pegs.
2. Select **Tools > Motion**. This activates the **Motion** tool.
3. Drag the motion points at the beginning or end of the motion path to give the motion path a direction. The mouse pointer becomes a four-headed arrow when you position it over a motion point that you can move.

The direction you drag the spline points depends on the window you are using.

- In **Top View**, you drag a motion point from top to bottom to change its FB position.
- In **Side View**, you drag a motion point from left to right to change its FB position.



You can also change the FB motion of motion points in the **Camera View** window by pressing [Alt] as you move the motion points.

- Press [Alt] and drag up to move the motion point backward.
 - Press [Alt] and drag down to move the motion point forward.
-

See Also

Showing/Hiding Elements on page 355

Creating a NS or EW Motion Path on page 269

Adding Pegs and Attaching Elements to Pegs on page 261

Changing the Start Time and Duration of a Peg on page 262

Changing Elements Over Time with Pegs on page 260


Basic Sceneplanning Concepts on page 238

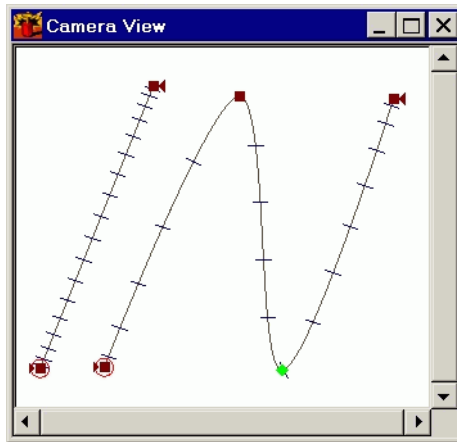
Adding Motion Points to a Motion Path


If you want to create a motion path that is not straight, you must add motion points to your motion path.

Motion points can be either key frames or control points. Key frames are locked to a specific frame number and control points are not locked.

- Add key frames when you want to lock the position of the motion path to a specific image in an element.
- Add control points when you want your element to reach a specific position, but you don't care when.


Then you can use the Motion  tool to move the motion points and change the shape of the motion path.



The start/end control points don't appear until you click the Motion  button.

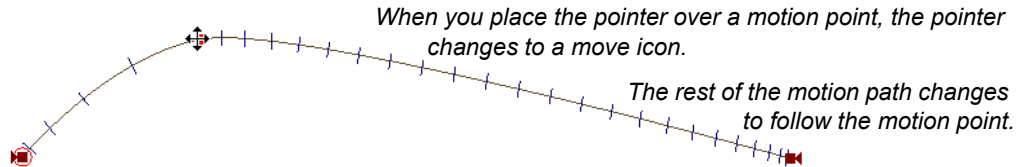
You can then drag the start/end motion points to change the shape of the motion path.

To add a motion point to a motion path, follow these steps:

1. Select a peg element in the **Timeline** window. The peg appears in all **View** windows. You can hide other elements to make it easier to identify and modify pegs.
2. Select **Tools > Motion**. This activates the **Motion**  tool.
3. Place the pointer over the motion path of the peg and decide which type of motion point you want to add.



- Press [Shift] and click the motion path to add a control point. The mouse pointer becomes a diamond when it is over a spot where you can add a control point. A green point appears on the motion path after you click.
 - Press [Alt] and click the motion path to add a key frame. The mouse pointer becomes a square when it is over a spot where you can add a key frame. A red point appears on the motion path after you click.
4. Drag the new point to a position where you want the motion path to be at that point. To nudge a motion point, you can also use the arrow keys. Press [Shift] if you want to move the motion point in larger increments.



- If you added a control point, notice how it changes position on the motion path. This is because the control point is not locked to a specific time frame.
- If you added a key frame, notice how it remains at the frame you added it to. This is because the key frame is locked at a specific time frame.




You can also add key frames to a motion path by using the Motion tool to drag the element that is attached to a peg. **Toon Boom Studio™** adds a key frame at the frame selected with the frame slider in the Timeline window.

See Also


Adding Motion Points with the Motion Point Tab on page 275
Deleting Motion Points from a Motion Path on page 278
Locking/Unlocking Control Points on page 279
Changing Elements Over Time with Pegs on page 260
Adding Pegs and Attaching Elements to Pegs on page 261
Copying and Pasting the Values of Motion Points on page 280

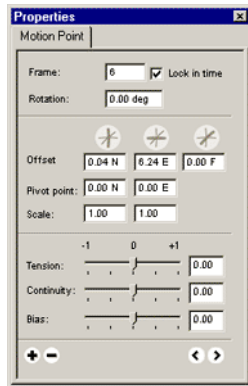
Adding Motion Points with the Motion Point Tab

As you build your motion path, the easiest way is to add motion points is to use the Motion  tool. But if you want to place a control point on a specific frame, this method can be inaccurate.


That's when you can use the Motion Point tab to add control points to your motion path. Not only does this tab allow you to add a motion point at a specific frame, but you can also lock or unlock motion points or delete them from the peg.

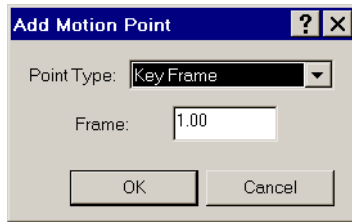
To add motion points, follow these steps:

1. Select the peg you want to affect from the **Timeline** window. The peg appears in all **View** windows.
2. Select **Tools > Motion**. This activates the **Motion**  tool. The control points and key frames appears on the motion path. If there is no motion path in the peg, you will only see the first and last key frames stacked on top of each other in the **View** windows.
3. Click a motion point on the motion path. The **Motion Point** tab opens in the **Properties** window.



*The **Motion Point** tab lists the properties of the motion point you have selected on the motion path.*

- Click the **New**  button at the bottom of the **Motion Point** tab. The **Add Motion Point** dialog box opens.



Use the Add Motion Point dialog box to add key frames or control points to your motion path.

- Select the type of motion point you want to add from the **Point type** drop-list. You have the following choices:
 - Key Frame**: places a red key frame at the selected frame.
 - Control Point**: places a green control point at the selected key frame, but you can drag it to any other frame.
- In the **Frame** field, type the frame number where you want to place the motion point and click **OK**. If you are adding a control point, you can enter a value with a decimal point.


See Also

Locking/Unlocking Control Points on page 279

Deleting Motion Points from a Motion Path on page 278


Adding Motion Points to a Motion Path on page 273

Moving Motion Points with the Motion Point Tab

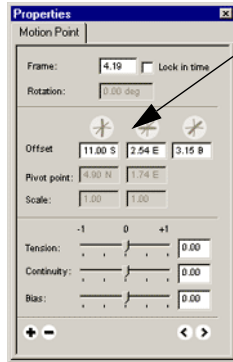
The Motion Point tab allows you to select individual motion points and change the size, angle, and offset position at that motion point. The Motion Point tab only appears when you select a key frame or control point with the Motion  tool.

You may want to use the Motion Point tab if you have a peg with many motion points and they are too close together to select one accurately. Or, you might not be able to see the individual points because the motion path is not extended.

To change the properties of a motion point, follow these steps:

- Select a peg in the **Timeline** window. The peg appears in all **View** windows.
- Select **Tools > Motion**. This activates the **Motion**  tool.

3. With the **Motion** tool, select a motion point on the motion path. The **Motion Point** tab opens in the **Properties** window.
4. Type the number of the frame that contains the control point or key frame you want to affect in the **Frame** field or select one using the **<** and **>** buttons (at the bottom of the **Motion Point** tab).



With the Motion Point tab, you can change the position of motion points to a precise value.

5. Type the position values in the **Offset** fields.
 - To change the North/South position, type the position coordinates in the first **Offset** field followed by N for North or S for South. You can also use positive or negative numbers:
 - ⇒ Positive values: places the element northward
 - ⇒ Negative values: places the element southward
 - To change the East/West position, type the position coordinates in the second **Offset** field followed by W for West or E for East. You can also use positive or negative numbers:
 - ⇒ Positive values: places the element eastward
 - ⇒ Negative values: places the element westward
 - To change the Front/Back position, type the position coordinates in the third **Offset** field followed by F for Front or B for Back. You can also use positive or negative numbers:
 - ⇒ Positive values: places the element to the front
 - ⇒ Negative values: places the element to the back

See Also

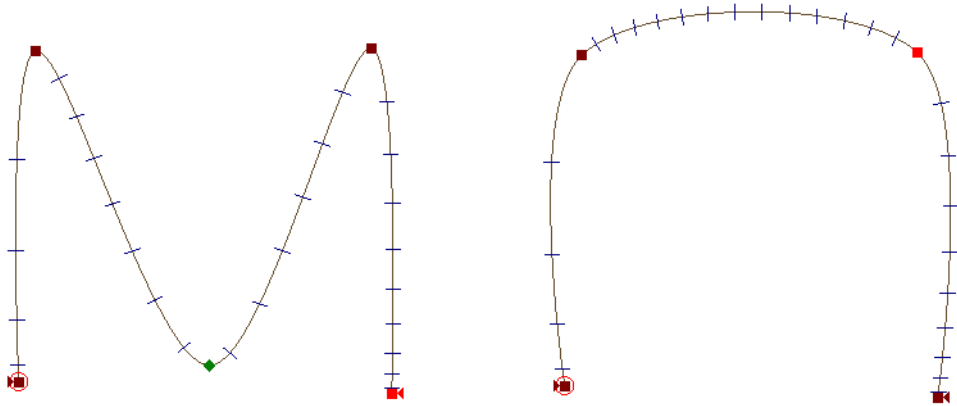
Changing Elements Over Time with Pegs on page 260

Creating Motion Paths with Pegs on page 267

Adding Pegs and Attaching Elements to Pegs on page 261

Deleting Motion Points from a Motion Path

You can remove unnecessary motion points from your motion path. When you remove a control point or key frame, the path reshapes itself to follow the remaining points.



You cannot remove the start and end key frames in any motion path.

To delete a point with the pointer:

- Select the control point/key frame and press [Del].

To delete a point with the Motion Point tab, follow these steps:

1. Select any motion point. You can use the < and > buttons to select any point in order along the motion path.

If you know the exact frame number where the point is, you can type it in the **Frame** field and press [Enter].

When you select a point, it appears highlighted in the **View** windows.

2. Click **Delete**  to remove the point.

See Also

Locking/Unlocking Control Points on page 279

Moving Motion Points with the Motion Point Tab on page 276

Adding Motion Points to a Motion Path on page 273

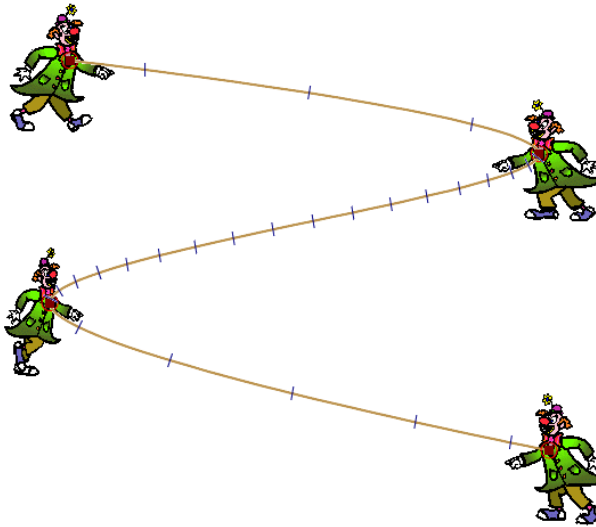
Creating Motion Paths with Pegs on page 267

Locking/Unlocking Control Points

When you add a control point to a motion path, you can change its position to anywhere between the closest key frames. This not only changes the shape of the motion path, but can also slightly affect the velocity of the pegged element's movement.

However, if you need the element's movement to change at a specific frame, you can lock the motion point at a specific frame number to create a key frame.

Let's say you had a character whose drawings changed drastically on specific key frames (for example, the character is pacing and he turns around at specific frames). If you wanted to plot a complex motion path for that character, you could lock the control points on the important frames and then change the shape of the motion path.



In this example, the clown drawings change at specific frames of 5, 24, and 30 and he suddenly turns around to walk in another direction.

Since these drawings occur at specific frames, we locked the control points to create key frames.

To lock/unlock your points, follow these steps:

1. Select a peg in the **Timeline** window. The peg appears in all **View** windows.
2. Select **Tools > Motion**. This activates the **Motion** tool.
3. With the **Motion** tool, select a motion point on the motion path. The **Motion Point** tab opens in the **Properties** window.
4. Use the **Lock in time** checkbox in the **Motion Point** tab to lock or unlock the point.

- If you select the **Lock in time** checkbox, the control point locks itself to the current frame and turns red on the motion path. The control point now becomes a key frame.
If your control point is between frames, **Toon Boom Studio™** selects the closest frame as the locked frame.
- If you deselect the **Lock in time** checkbox, the key frame becomes unlocked and turns green, indicating you can change its position. The key frame now becomes a control point.
The frame number may change as well since the spline adjusts its velocity on either side of the control point.

See Also

Changing the Velocity of a Motion Path on page 287

Deleting Motion Points from a Motion Path on page 278

Moving Motion Points with the Motion Point Tab on page 276

Adding Motion Points to a Motion Path on page 273

Creating Motion Paths with Pegs on page 267


Copying and Pasting the Values of Motion Points

You can copy and paste the values of motion points to other motion points. This can save you lots of time, especially if you use the keyboard shortcuts to select motion points.

There are two different ways to copy and paste the values of a motion point.

- Basic Copy and Paste copies the position values of the copied point into the selected point.
- Paste Special allows you to copy additional values from the original point (including tension, continuity, bias, rotation, scale and pivot).
Because certain values can only be applied to key frames, the options in the Paste Special dialog box change based on the characteristic of the motion point that you select to receive the pasted values.

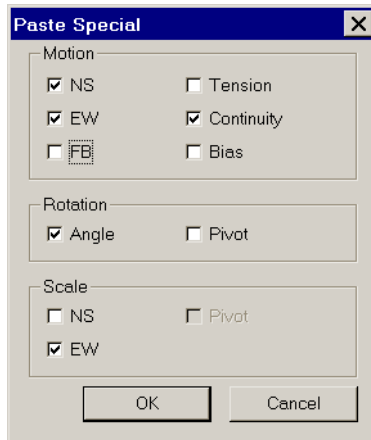
To copy and paste the position values of a motion point, follow these steps:

1. Select a peg in the **Timeline** window and select the motion point whose position values you want to copy. Use one of the following methods:
 - Select **Tools > Motion** and click the motion point with the **Motion**  tool.

- Select **Element > Motion Points > Previous Motion Point** or **Next Motion Point**.
 - Click the **<** and **>** buttons at the bottom of the **Motion Point** tab.
2. Select the motion point you want to copy the values to and select **Edit > Paste Point**. **Toon Boom Studio™** copies the NS, EW, and FB values to the selected motion point.

To copy and paste selected values of a motion point, follow these steps:

1. Select a peg in the **Timeline** window and select the motion point whose position values you want to copy. Use one of the following methods:
 - Select **Tools > Motion** and click the motion point with the **Motion** tool.
 - Select **Element > Motion Points > Previous Motion Point** or **Next Motion Point**.
 - Click the **<** and **>** buttons at the bottom of the **Motion Point** tab.
2. Select the motion point you want to copy the values to and select **Edit > Paste Special**. The **Paste Special** dialog box opens.



3. Select the values you want to paste into the selected motion point and click **OK**.

See Also

Creating Motion Paths with Pegs on page 267
 Rotating Elements Over Time on page 289
 Scaling Elements Over Time on page 297
 Changing the Pivot Point Over Time on page 303

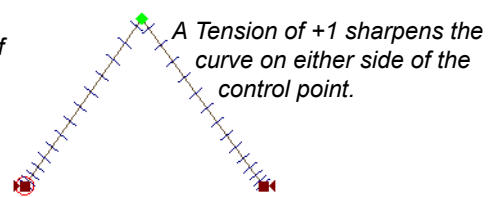
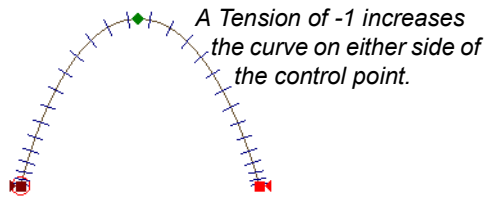
Adjusting the Curve Between Motion Points

When you add a motion point and change its position, the motion path curves towards that point, reshaping the entire motion path. By default, the line has a gentle curve on either side of the control point.

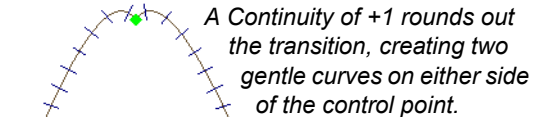
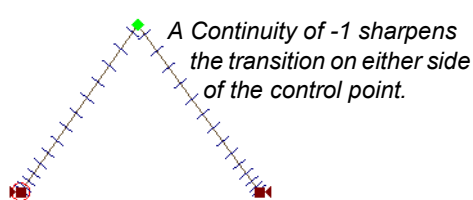
You can use the Tension, Bias, and Continuity sliders in the Motion Point tab to adjust the amount of curve on either side of a motion point, further customizing the segments of the motion path.

You can adjust each point individually in your motion path, but if you press [Shift] while dragging the slider, the selected value applies to all the peg points. By default, each value starts at 0.0, but you can change the default value.

Tension: controls how sharply the path bends as it pass through a motion point.

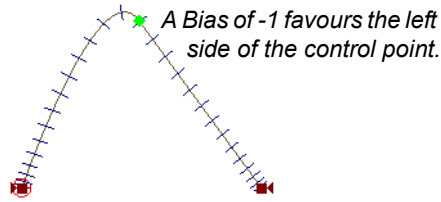


Continuity: controls the smoothness of a transition between the segments joined by a point.

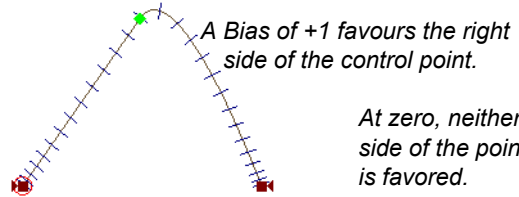


A zero value creates a smooth transition.

Bias: controls the slope of the path so that it flows towards one side of the motion point or the other.



A Bias of -1 favours the left side of the control point.



A Bias of +1 favours the right side of the control point.

At zero, neither side of the point is favored.

See Also

Defining the Default Tension, Continuity and Bias Values on page 283

Adding Motion Points to a Motion Path on page 273

Moving Motion Points with the Motion Point Tab on page 276

Creating a FB Motion Path on page 271

Creating a NS or EW Motion Path on page 269

Copying and Pasting the Values of Motion Points on page 280

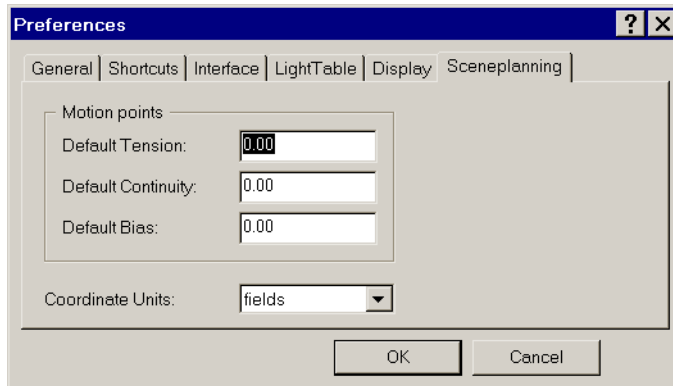
Defining the Default Tension, Continuity and Bias Values

As you work on the shape of your motion path, you can change the default tension, bias, or continuity values using the Sceneplanning tab in the Preferences dialog box.

Toon Boom Studio™ uses the values you select for all future motion points you add; existing motion points are not changed.

To define the default Tension, Continuity, and Bias values, follow these steps:

1. Select **Edit > Preferences**. The **Preferences** dialog box opens.
2. Click the **Sceneplanning** tab.



3. Type the default values in any of the following fields. You can type any value between -1.0 and 1.0:
 - **Default Tension:** controls how sharply the path bends as it pass through a motion point.
 - **Default Continuity:** controls the smoothness of a transition between the segments joined by a point.
 - **Default Bias:** controls the slope of the path so that it flows towards one side of the motion point or the other.
4. Click **OK** when you are done.

See Also

Adding Motion Points to a Motion Path on page 273
Moving Motion Points with the Motion Point Tab on page 276
Creating a FB Motion Path on page 271
Creating a NS or EW Motion Path on page 269
Adjusting the Curve Between Motion Points on page 282

Plotting the Motion Path in the 1D Editor

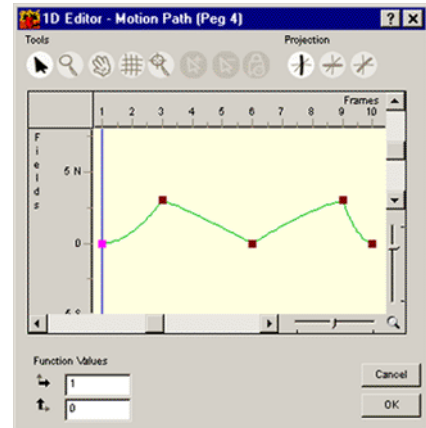
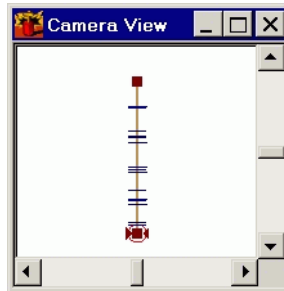
The 1D Editor window allows you to plot a motion path in each of the 3 dimensions, one dimension at a time.

If you want to create a complex motion that is difficult to work out visually in the View windows, edit the motion path in the 1D Editor.

For example, let's say you want an element to move up and down, east and west, or back and forth along the same path. It would be difficult for you to map out this motion in the View windows because you cannot see the motion path through time. To make a motion that follows the same path repeatedly, you must use the 1D Editor.

In the Camera View window, you can see a motion path that appears to have only two key frames. In fact this motion path consists of multiple key frames, but you can't see them because the motion path repeats over the same path.

In the 1D Editor (North/South Projection), you can see the north/south position of the motion point at each frame. The 1D Editor is ideal for modifying this type of motion path.

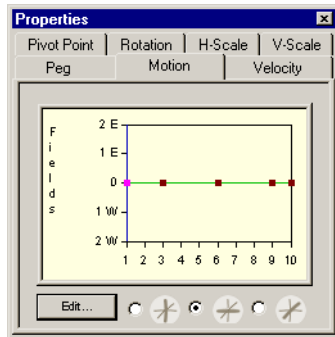


To plot the motion of a peg in the 1D Editor, follow these steps:

1. Select a peg in the **Timeline** window. The **Properties** window displays a series of tabs that allow you to edit different types of effects for the selected peg.

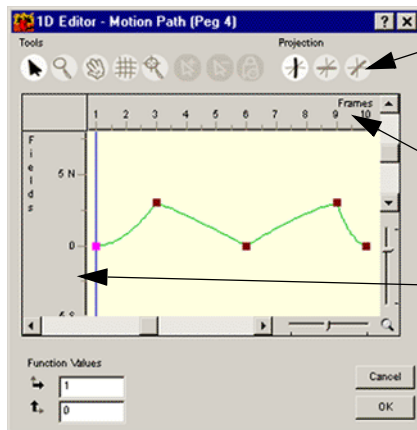
If the **Properties** window is not active, you can activate it by selecting **Window > Properties**.

2. Click the **Motion** tab in the **Properties** window. The **Motion** tab displays a preview of the plotline of the peg's motion path.



If you haven't made any changes to a peg's NS/EW/FB position, the plotline in the Motion tab appears as a straight line at zero.

3. Select the dimension you want to work in:
 - Select the **NS** button to map an element's path from North to South.
 - Click the **EW** button to map an element's path from East to West.
 - Click the **FB** button to map an element's path from Front to Back.
4. Click **Edit** to edit the motion path in the selected dimension. The **1D Editor** window opens.



You can use these buttons to change dimensions.

The plotline represents the position of each motion point at each frame.

- *The axis at the top of the plotline displays the frame number.*
- *The axis on the left of the plotline displays the position.*

5. Add control points to the plotline to plot the peg's motion and click **OK**.

See Also

Positioning Pivot Points in the 1D Editor on page 309
 Creating Motion Paths with Pegs on page 267
 Working with the 1D and Function Editors on page 311

Changing the Velocity of a Motion Path

The Function Editor window allows you to change the velocity of motion paths.

The distribution of frame marks on a motion path in the Camera View window determines how fast a change is going to happen.

- the closer together the frame marks, the slower the action
- the farther apart the frame marks, the faster the action

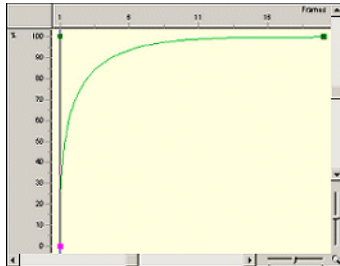


The frame marks on this motion path are concentrated at the start. This means that the action will start slow and end really fast.

The frame marks are concentrated at the end of the motion path, so the action will start fast and end really slow.

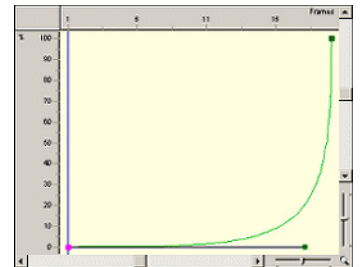


The Function Editor provides a number of preset acceleration changes that you can apply to your peg. In the Function Editor, velocity is represented by the curve of the plotline.



The plotline to the left represents fast acceleration at the start of the motion and slow deceleration at the end.

The plotline to the right represents slow acceleration at the start of the motion and fast deceleration at the end.

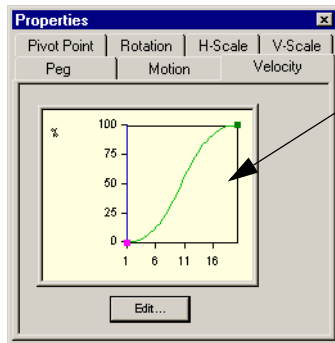


To change the velocity of a peg, follow these steps:

1. In the **Timeline** window, select the peg whose velocity you want to modify. The **Properties** window displays a series of tabs that allow you to map different types of effects for the selected peg.

If the **Properties** window is not active, you can activate it by selecting **Window > Properties**.

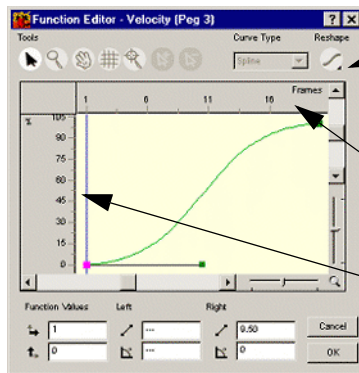
- Click the **Velocity** tab in the **Properties** window. The **Velocity** tab displays a preview of the flowchart that maps out the selected peg's speed.



The plotline in the Velocity tab represents the velocity of the selected peg.

This plotline represents a velocity curve that eases-in and out.

- Click **Edit** to modify the element's velocity. The **Function Editor** window opens.



You can use the **Reshape** options change the velocity of the peg with preset velocities.

The x-axis (horizontal axis) marks the frame number.


The y-axis (vertical axis) marks the percentage of distance covered.

- Change the velocity of the peg by adjusting the shape of the plotline in the **Function Editor**. You can select preset velocity settings from the **Reshape** menu or you can add and adjust key frames.
- Click **OK** when done.


See Also

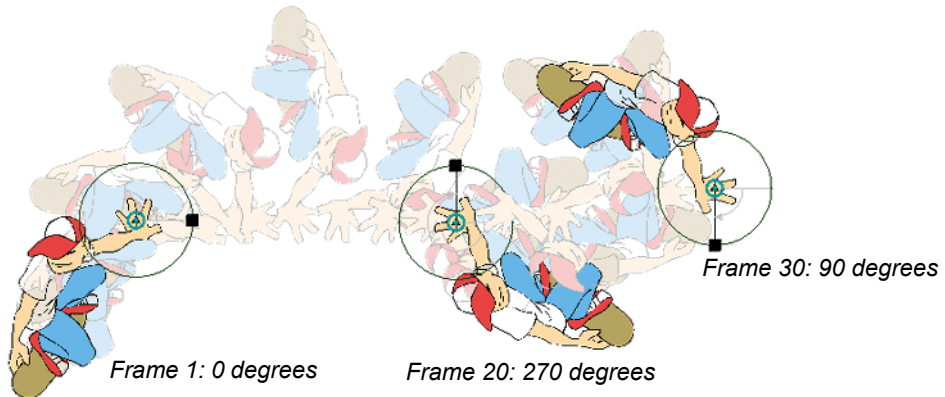
Working with the 1D and Function Editors on page 311
Scaling a Peg with the Function Editor on page 301
Creating Motion Paths with Pegs on page 267
Changing Elements Over Time with Pegs on page 260
Basic Sceneplanning Concepts on page 238

Rotating Elements Over Time

After you attach an element to a peg, you can create gradual changes to the rotation of the peg using the Rotate  tool. When the Rotate tool is active, the peg displays a rotation handle that you can use to rotate the peg and all attached elements.

For example, let's say you have an element that starts at frame 1 and ends at frame 30. If you wanted the element to rotate from 0 to 270 degrees by frame 20, and then rotate back to 90 degrees by frame 30, here's what you would do:

- Attach the element to a peg and change the duration of the peg to 30.
- Select frame 1 and make sure there is no rotation on the peg (rotation angle of 0 degrees).
- Select frame 20 and use the Rotate  tool to rotate the peg to 270 degrees.
- Select frame 30 and rotate the peg back to 90 degrees.



When you play the scene back, the element rotates gradually from 0 degrees to 270 degrees at frame 20 and then rotates back to 90 degrees by frame 30. In this example, the character is also moving from West to East over the 30 frames.



You can rotate pegs like you can most elements in the 3D space. When you rotate pegs, all elements attached to the pegs are also rotate. The rotation value of the peg appears on the Peg tab. Any rotation you add to key frames are based on the static rotation value of the peg plus the changes you make.

See Also

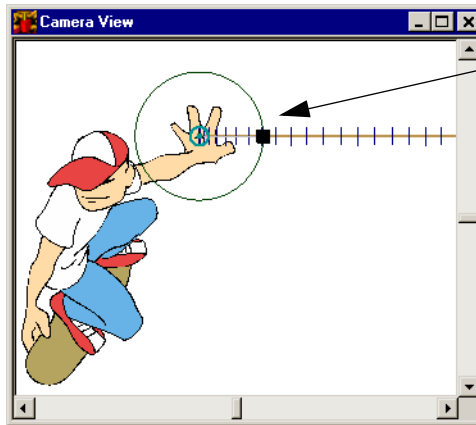
Rotating a Peg in the Camera View Window on page 291
Rotating a Peg with the Motion Point Tab on page 293
Rotating a Peg with the Function Editor on page 295
Rotating Elements on page 255

Rotating a Peg in the Camera View Window

To change the angle of a pegged element, you can work in the Camera View window to rotate the element visually (you cannot change an element's rotation in either the Top or Side View windows). You can select a frame, set the element's angle, and **Toon Boom Studio™** interpolates the element's rotation between frames.

To rotate a pegged element in the Camera View window, follow these steps:

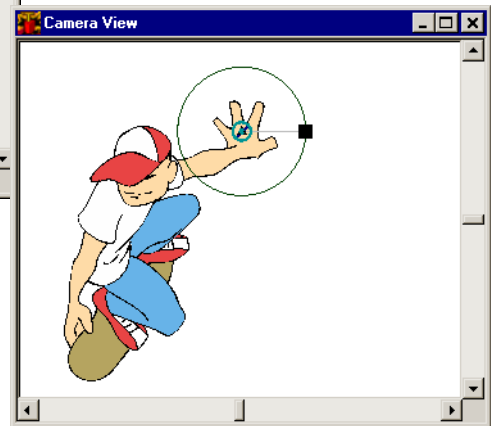
1. Select the peg in the **Timeline** window. The peg appears in the **View** windows.
2. Select **Tools > Rotate**. This activates the **Rotate** tool. The rotation handle appears on the selected peg at the current frame in the **Camera View** window.



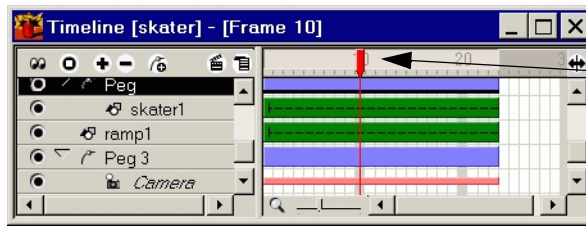
If the motion path is visible in the Camera View window, it appears at the selected frame on the peg.

If there is a motion path for the peg, you will see the motion path.

If there is no motion path, the rotation handles will appear over the center of the peg.



3. In the **Timeline** window, drag the red frame slider to the frame where you want the element to complete its rotation.



4. In the Camera View window, use the rotation handle to change the rotation of the element. **Toon Boom Studio™** interpolates the pegged element's rotation for the other frames so that it ends on the selected angle.
 - Press [Shift] to rotate the peg at 15 degree increments.
 - If you drag the element attached to the peg, you will move the pivot point.



You can show element arms when you are rotating a peg that you have attached multiple elements to. When you show element arms, a rotation handle appears on each element attached to the peg. To display element arms:

- Select **View > Peg > Show Element Arms**.

5. Repeat steps 3 and 4 for every rotation you want to apply to the peg.

Each time you set the rotation of a peg at a specific frame, **Toon Boom Studio™** adds a rotation key frame that does not appear on the motion path. However, you can see these rotation points on the Rotate tab in the Properties window.


See Also

Rotating a Peg with the Function Editor on page 295
Changing Elements Over Time with Pegs on page 260
Rotating a Peg with the Motion Point Tab on page 293
Copying and Pasting the Values of Motion Points on page 280
Rotating Elements on page 255


Rotating a Peg with the Motion Point Tab

You can use the Motion Point tab to change the rotation of a peg at specific key frames.

You may want to use the Motion Point tab if you have a peg with many key frames that are too close together to select one accurately. Or, you might not be able to see the individual points because the motion path is not extended into a motion path.

The Motion Point tab only appears when you use the Motion  tool to select one of the motion points on the motion path. You can only change the rotation value for a key frame, not a control point.

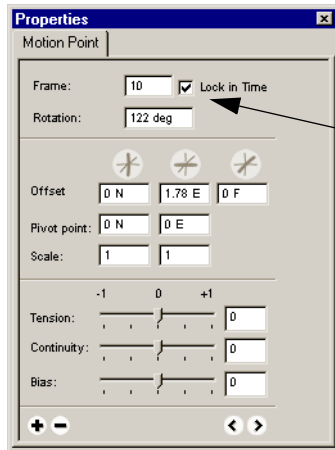
To rotate a peg using the Motion Point tab, follow these steps:

1. Select the peg in the **Timeline** window. The peg appears in the **View** windows.
2. Select **Tools > Motion**. This activates the **Motion**  tool. All motion points appear on the motion path.
3. Click one of the motion points on the peg to display the **Motion Point** tab.
4. In the **Frame** field, type the number of the frame that contains the key frame you want to rotate or select one using the **<** and **>** buttons (at the bottom of the **Motion Point** tab).

5. In the **Rotation** field, type the angle of rotation.

- To rotate the element to the right, type a positive degree value.
- To rotate the element to the left, type a negative degree value.

If you want your peg to rotate multiple times, enter a value over 360 degrees.
Just remember, one full rotation is 360 degrees.



Key frames do not have a decimal value.

The Lock in Time field is also selected when you select a key frame.

The peg will rotate in the **Camera View** window as soon as you make the change to the rotation angle.

See Also

Rotating a Peg with the Function Editor on page 295

Changing Elements Over Time with Pegs on page 260

Rotating a Peg in the Camera View Window on page 291

Rotating a Peg with the Function Editor

The Function Editor allows you to change the rotation of an element over the duration of the peg.

The Function Editor allows you to plot a peg's rotation over time and using a plotline that gives you greater control over the specific rotation values as well as the speed of the rotation.

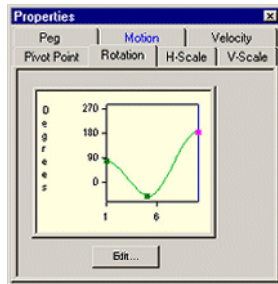
Also, if you use the peg in the Camera View window to add rotation key frames, the only way to precisely remove or modify these key frames is by using the Function Editor because the key frames for rotation do not appear on the motion path.

To define the rotation motion of a pegged element, follow these steps:

1. Select the peg in the **Timeline** window. The peg appears in the **View** windows. The **Properties** window displays a series of tabs that allow you to set up different types of effects for the selected peg.

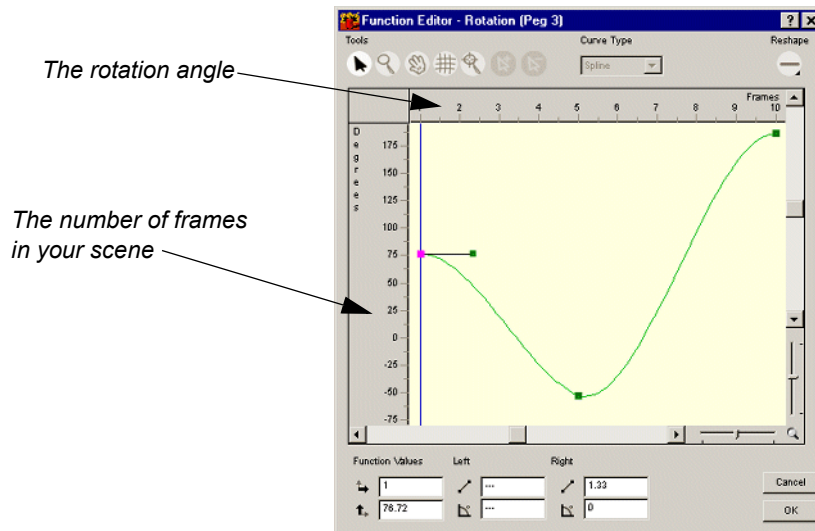
If the **Properties** window is not active, you can activate it by selecting **Window > Properties**.

2. Click the **Rotation** tab in the **Properties** window. The **Rotation** tab displays a preview of the flowchart that maps out the selected peg's rotation path.



There are three key frames visible in this plotline for the selected peg.

- Click **Edit** to modify the peg's rotation angle. The **Function Editor** window appears.



- Change the element's angle of rotation by adjusting the plotline in the **Function Editor**.



You can add key frames and change the shape of the plotline as it passes through these points. The **Reshape** options change the shape of the curve between two key frames and affects the speed of the rotation.

- Click **OK** when done.


See Also

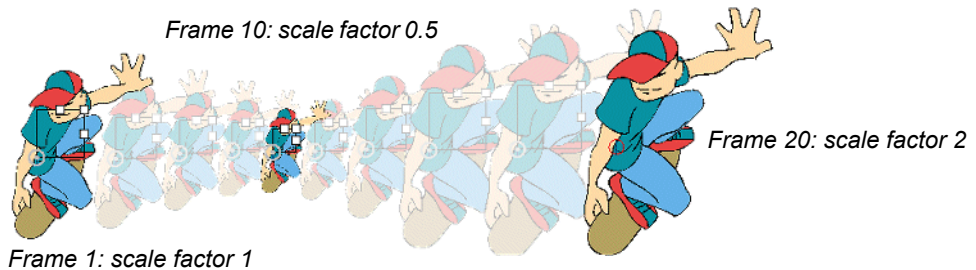
Rotating a Peg in the Camera View Window on page 291
Working with the 1D and Function Editors on page 311

Scaling Elements Over Time

After you attach an element to a peg, you can create gradual changes to the size of the peg using the Scale  tool. When the Scale  tool is active, the peg displays square scaling handle that allows you to stretch or shrink the size of the peg and all attached elements.

For example, let's say you have an element that starts at full size at frame 1, shrinks to half-size at frame 10, and grows to twice its original size by frame 20. Here's an example of what you would do:

- Attach the element to a peg and change the duration of the peg to 20.
- Select frame 1 and make sure there is no scale change to the peg.
- Select frame 10 and use the Scale  tool to reduce the peg to half its original size.
- Select frame 20 and stretch the peg to twice its original size.



When you play the scene back, the element changes size gradually from full size to reduced size at frame 10 and then to much larger by frame 20. In this example, the character is also moving from West to East over the 20 frames.



You can also scale pegs like you can most elements in Sceneplanning Mode. When you scale pegs, all elements attached to the pegs also resize. The scale value of the peg appears on the Peg tab. Any scale change you add to key frames are based on the static scale value of the peg plus the changes you make.


See Also

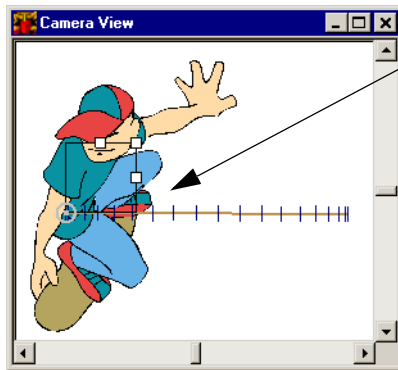
Scaling a Peg in the Camera View Window on page 298
 Scaling Elements on page 250
 Changing Elements Over Time with Pegs on page 260

Scaling a Peg in the Camera View Window

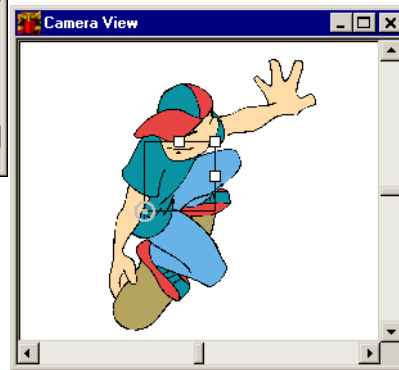
You can change the size of a peg visually in the Camera View window (you cannot scale an element in either the Top or Side View windows). You can select a frame, set the element's size, and **Toon Boom Studio™** interpolates the element's change in size between frames.

To scale a peg in the Camera View window, follow these steps:

1. Select the peg in the **Timeline** window. The peg appears in the **View** windows.
2. Select **Tools > Scale**. This activates the **Scale**  tool. The square scaling handle appears on the selected peg at the current frame.



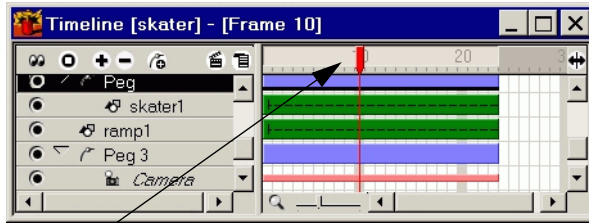
If the motion path of the peg is visible in the Camera View window, it appears at the selected frame on the peg.



If there is a motion path for the peg, you will see the motion path.

If there is no motion path, the resize handles will appear over the center of the peg.

3. Drag the frame slider to the frame where you want to resize the pegged element.



This is the frame slider.

4. Use the scale handles to resize the peg's height, width or both. Press [Shift] to maintain the proportions of the element as you scale it.

Toon Boom Studio™ interpolates the peg's size for the other frames so that it ends on the scale you select.

Each time you set the size of a peg at a specific frame, **Toon Boom Studio™** adds a scaling key frame that does not appear on the motion path. However, you can see these scale points using the **HScale** and **VScale** tabs in the **Properties** window.

5. Repeat steps 3 and 4 for every scale change you want to apply to the peg.


See Also

Scaling a Peg with the Function Editor on page 301
 Scaling a Peg in the Motion Point Tab on page 299
 Changing Elements Over Time with Pegs on page 260
 Creating Motion Paths with Pegs on page 267
 Rotating Elements Over Time on page 289
 Copying and Pasting the Values of Motion Points on page 280

Scaling a Peg in the Motion Point Tab

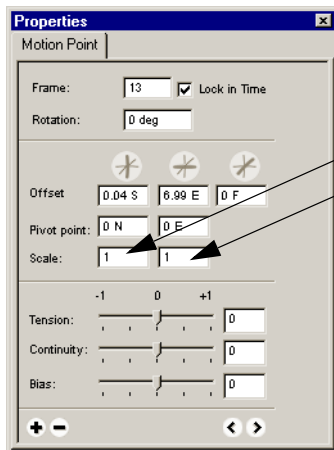
You can use the Motion Point tab to scale a peg at specific key frames.

You may want to use the Motion Point tab if you have a peg with many key frames that are too close together to select one accurately. Or, you might not be able to see the individual points because the motion path is not extended into a motion path.

The Motion Point tab only appears when you use the Motion  tool to select one of the control points/key frames on the motion path. You can only change the rotation value for a key frame, not a control point.

To scale a peg using the Motion Point tab, follow these steps:

1. Select the peg in the **Timeline** window. The peg appears in the **View** windows.
2. Select **Tools > Motion**. This activates the **Motion** tool. All motion points appear on the motion path.
3. Click one of the motion points on the peg to display the **Motion Point** tab.
4. Select the key frame you want to modify using one of the following methods:
 - In the **Frame** field, type the number of the frame that contains the key frame you want to scale or select one using the **<** and **>** buttons (at the bottom of the **Motion Point** tab).
 - Select **Element > Motion Points > Previous Motion Point** or **Next Motion Point**.
5. Type the scale size in the **Scale** fields.
 - To change the height of the element, type the height value in the left **Scale** field.
 - To change the width of the element, type the width value in the right **Scale** field.



The **Scale** fields are active only when you select a key frame:

- The height value is in the left field.
- The width value is in the right field.

See Also

Scaling a Peg with the Function Editor on page 301
Scaling a Peg in the Motion Point Tab on page 299
Changing Elements Over Time with Pegs on page 260
Rotating Elements Over Time on page 289

Scaling a Peg with the Function Editor

The Function Editor allows you to plot a change in angle of an element over time, using a plotline that gives you greater control over the specific scale values as well as the speed of the scale change.

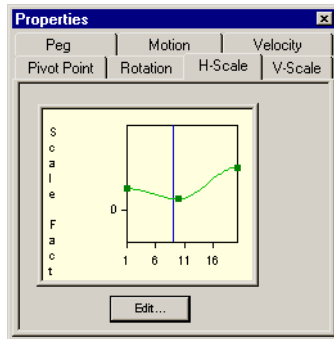
Also, if you use the peg in the Camera View window to add scaling key frames, the only way to precisely remove or modify these key frames is by using the Function Editor because the key frames for rotation do not appear on the peg.

To scale a peg using the Function Editor, follow these steps:

1. Select the peg in the **Timeline** window. The peg appears in the **View** windows. The **Properties** window displays a series of tabs that allow you to set up different types of effects for the selected peg.

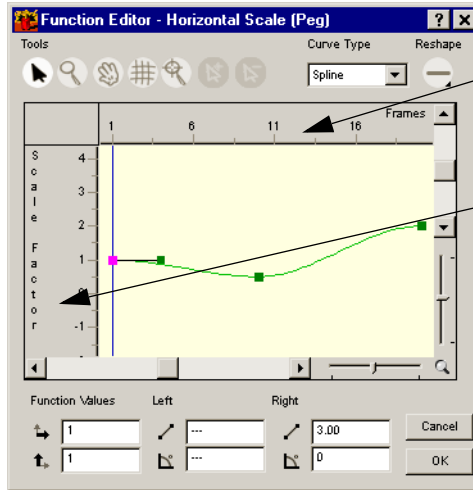
If the **Properties** window is not active, you can activate it by selecting **Window > Properties**.

2. Select the type of scaling change you want to make from the following two tabs:
 - Click the **HScale** tab to make changes to the element's horizontal size (the width).
 - Click the **VScale** tab to make changes to the element's vertical size (the height).
3. Depending on the tab you select, the **HScale/VScale** tab displays a preview of the plotline that maps out the scale change of the peg.



There are three key frames visible in this plotline for the selected peg.

4. Click **Edit** to modify the element's scale. The **Function Editor** window appears.



The axis on the top of the window displays the number of frames in your scene.

The axis on the left of the window displays the scale factor.

5. Select the type of plotline you want to use to map the change in scale from the **Curve Type** drop-list. You can select one of two options:

- **Spline**: you can control the velocity of scaling changes by reshaping the plotline.
- **Velocity-based**: you can link the velocity of scale changes to the element's velocity.

This option is useful when an element is moving at a specific speed and you want it to change its scale with the same speed.

6. Change the element's scale factor by adjusting the plotline in the **Function Editor** and click **OK** when done.

You can add key frames and change the shape of the plotline as it passes through these points. If you select the **Spline** option, you can use the **Reshape** options to change the shape of the curve between two key frames and affect the speed of the scale change.

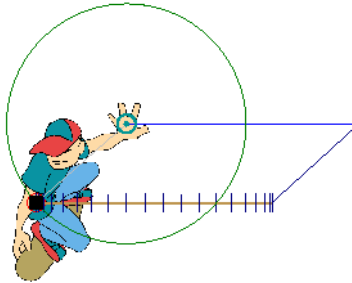
See Also

Scaling a Peg in the Camera View Window on page 298
Working with the 1D and Function Editors on page 311
Scaling a Peg in the Motion Point Tab on page 299
Changing Elements Over Time with Pegs on page 260
Creating Motion Paths with Pegs on page 267
Rotating Elements Over Time on page 289

Changing the Pivot Point Over Time

The peg has its own rotational and scaling pivot point. If you don't modify it, the pivot point remains at the center of the peg for its duration. You can choose to move the pivot point for a rotation or a scaling effect.

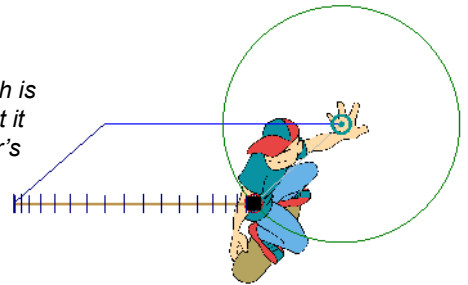
Let's say that you have a character that is rotating as it follows a motion path. However the center of the motion path is at the character's feet and you want the character to spin on his hand. You would move the pivot point to the character's hand at the first and last frame so that the pivot point remains on his hand for the duration of the peg.



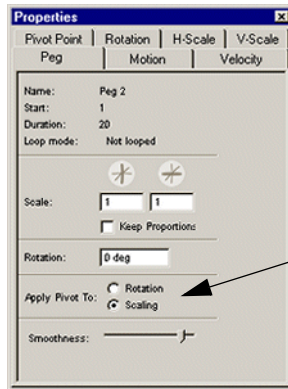
As this skateboard zooms along, we want him to spin on his hand, not on the center of the peg.

So we moved the pivot point at the first frame and the last frame so that it would stay in the same position as the skater rotates on it.

The line that runs parallel to the motion path is the path of the pivot point. You can see that it stays in the same spot on the skateboarder's body as he moves to the right.

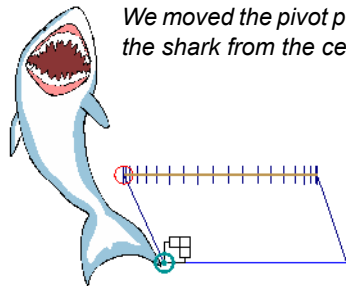


You can apply the pivot point to either rotation or scaling, not both. You use the **Apply Pivot To** option in the **Peg** tab to apply the moving pivot to either the scale or rotation. The pivot point stays at the center of the peg for the effect you do not apply the pivot point change to.

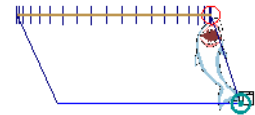


You use the Apply Pivot To option to move the pivot point for either rotation or scaling.

You would move the pivot point for a scale change if you wanted the center of the scale change to be on a point other than the center of the peg.



We moved the pivot point to the tail of the shark from the center of the peg.



You can see by the straight pivot path that the position of the pivot will stay on the shark's tail from frame 1 to 20.



See Also

- Positioning Pivot Points in the Camera View on page 305
- Positioning Pivot Points in the Motion Point Tab on page 307
- Positioning Pivot Points in the 1D Editor on page 309
- Changing Elements Over Time with Pegs on page 260
- Working with the 1D and Function Editors on page 311
- Basic Sceneplanning Concepts on page 238

Positioning Pivot Points in the Camera View

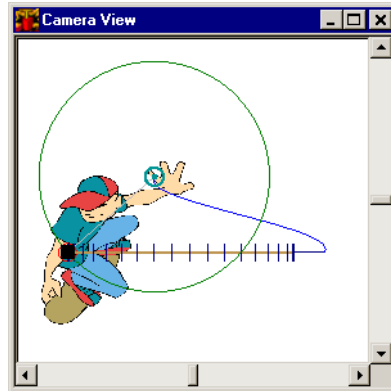
If your peg has a motion path that you can see in the Camera View window, you can make changes to the pivot point directly in the Camera View window. However, if you can't see the motion path clearly, then you should use the Pivot Point tab in the Properties window to position its pivot points.

To edit the pivot path with the Camera View window, follow these steps:

1. In the **Timeline** window, select the peg that has the pivot point you want to move over time.
2. Select the **Peg** tab in the **Properties** window and decide which effect you want to apply the pivot point to:
 - Select the **Rotation** radio button to change the rotation pivot point.
 - Select the **Scaling** radio button to change the scaling pivot point.
The pivot point of the effect you do not select stays centered on the peg.
3. Based on your selection in the **Peg** tab, select the appropriate tool.
 - To change the rotation pivot point, select **Tools > Rotate**. The **Rotate**  tool becomes active and the rotation handle appears on the selected peg at the current frame.
 - To change the scaling pivot point, select **Tools > Scale**. The **Scale**  tool becomes active and the scale handle appears on the selected peg at the current frame.
4. Select **View > Peg > Show Pivot Path** so that you can see how the pivot will move over the duration of the peg.

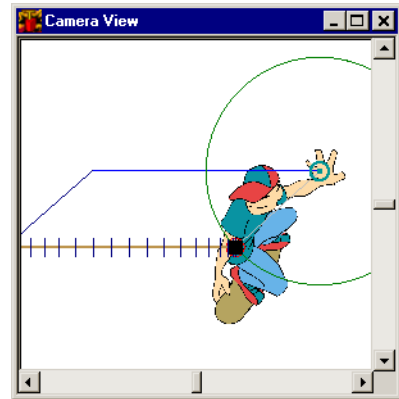
5. Use the active tool to drag the pivot point to the position you want.
 - By default, moving the pivot point moves the entire pivot path.
 - To add key frames to the pivot path so that you can change the position of the pivot point dynamically, select the frame with the frame slider in the Timeline window and press [Shift] as you move the point.

The graph on the Pivot Path tab is updated as you move the pivot point.



In this example, we gave the pivot point the same value at the first frame and the last frame so that it would stay in the same position on the character throughout the rotation.

When you change the frame number and drag the pivot point, it adds a pivot key frame, reshaping the pivot path.



6. Repeat steps 5 and 6 until you have created the pivot point path you want. You can use the **1D Editor** to correct the motion path of the pivot point.


See Also

Positioning Pivot Points in the 1D Editor on page 309
Positioning Pivot Points in the Motion Point Tab on page 307
Changing Elements Over Time with Pegs on page 260
Copying and Pasting the Values of Motion Points on page 280


Positioning Pivot Points in the Motion Point Tab

If the key frames of a peg are too close together to select individually, or the motion path is not extended and you cannot see the individual points, use the Motion Point tab.

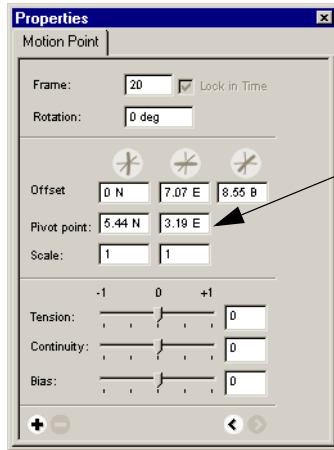
The Motion Point tab lets you select key frames in a peg and modify the position of the peg's pivot point.

The Motion Point tab only appears when you select a motion point with the Motion  tool. You can only change the pivot point position at key frames.

To change the position of a pivot point using the Motion Point tab, follow these steps:

1. In the **Timeline** window, select the peg that has the pivot point you want to move over time.
2. Select **View > Peg > Show Pivot Path** so that you can see in the **Camera View** window how the pivot will move over the duration of the peg.
3. Select **Tools > Motion**. This activates the **Motion**  tool. All motion points appear on the motion path.
4. Click one of the motion points on the peg to display the **Motion Point** tab.
5. In the **Frame** field, type the number of the frame that contains the key frame you want to modify or select one using the **<** and **>** buttons (at the bottom of the **Motion Point** tab).

6. Type the pivot point position in the **Pivot Point** fields.
- NS position: type the vertical position value in the left **Pivot Point** field.
 - EW position: type the horizontal position value in the right **Pivot Point** field.



The Pivot point fields display the north/south and east/west values for the pivot point.

See Also

Positioning Pivot Points in the 1D Editor on page 309
Positioning Pivot Points in the Camera View on page 305
Changing Elements Over Time with Pegs on page 260

Positioning Pivot Points in the 1D Editor

Use the 1D Editor to map out the pivot point path if there is no motion path on the peg or the path is not visible in the Camera View window.

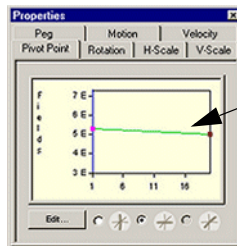
For example, if you had a character that jumped up and down in place, the motion path would most likely stretch up and down in the same spot, making it difficult to distinguish one frame from another in the motion path.

The 1D Editor allows you to edit the pivot point path along the North/South or East/West axes. If you had a motion path shaped like the one in the example, you could see its path in the 1D Editor since it displays the change of position in relation to the frame time.

To edit the pivot path with the 1D Editor window, follow these steps:



1. In the **Timeline** window, select the peg that has the pivot point you want to move over time.
2. Select **View > Peg > Show Pivot Path** so that you can see in the **Camera View** window how the pivot will move over the duration of the peg.
3. Select the **Peg** tab in the **Properties** window and decide which effect you want to apply the pivot point to:
 - Select the **Rotation** radio button to change the rotation pivot point.
 - Select the **Scaling** radio button to change the scaling pivot point.

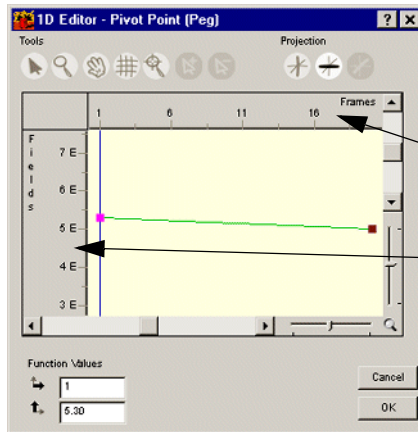
The pivot point of the effect you do not select stays centered on the peg.
4. Select the **Pivot Point** tab in the **Properties** window and click **Edit**. The **1D Editor** window opens.



In the Pivot Point tab, you can see that the first and last key frames do not have exactly the same value.

You can use the 1D Editor to make those values the same.

5. Select the dimension you want to edit.
 - **North/South** : moves the pivot point up or down
 - **East/West** : moves the pivot point left or right.



The x-axis (horizontal axis) marks the frame number.

The y-axis (vertical axis) marks the position of the pivot point relative to the motion path.

6. Change the path of the pivot point by changing the values of existing key frames or key frames that you add in the **1D Editor**.

See Also

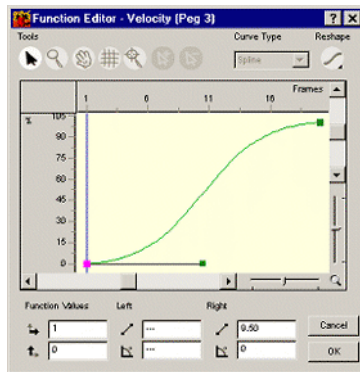
Positioning Pivot Points in the Motion Point Tab on page 307
Positioning Pivot Points in the Camera View on page 305
Changing Elements Over Time with Pegs on page 260
Working with the 1D and Function Editors on page 311

Working with the 1D and Function Editors

The Function Editor and the 1D Editor use plotlines to represent changes to properties over time.

With the Function Editor, you can map the values of an effect over a set number of frames.

- Along the x-axis (horizontal axis) are the frame numbers.
- Along the y-axis (vertical axis) are the values for the effect you are editing (rotation, horizontal and vertical scale, velocity and field-of-view).



The slope of the plotline in the Function Editor represents the velocity of an effect.

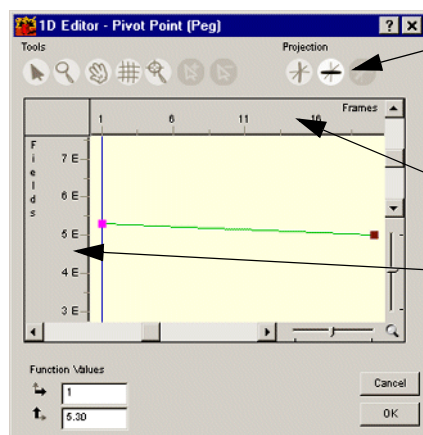
- A steep slope indicates that the value will change quickly.
- A gradual slope indicates that the value will change gradually.

You can modify how quickly a change (such as rotation, scale or velocity) occurs by modifying the shape of the plotline.

The 1D Editor allows you to map the movement of a peg in a 3-dimensional space or a pivot point in 2-dimensional space, one dimension at a time. The 1D Editor presents different views of the plotline so that you can isolate specific directions in the motion path to make precise changes at specific frames.

For example, let's say that you want your character to jump up and down in place. It would be difficult to create a jumping motion path in the Sceneplanning View windows because the path would repeat on top of itself. To create a jumping motion, it would be easier to edit the motion path of the peg using the 1D Editor.

Like the Function Editor, you can use the 1D Editor to map the values of an effect over a set number of frames.



The Projection panel allows you to choose the dimension you want to edit.

Along the x-axis (horizontal axis) are the frame numbers.

Along the y-axis (vertical axis) are the values for the effect you are editing (motion path and pivot path).

See Also

Adding Key Frames and Changing their Value on page 313

Reshaping the Plotline in the Function Editor on page 315

Changing Your View of the Editor Window on page 317

Adding Key Frames and Changing their Value

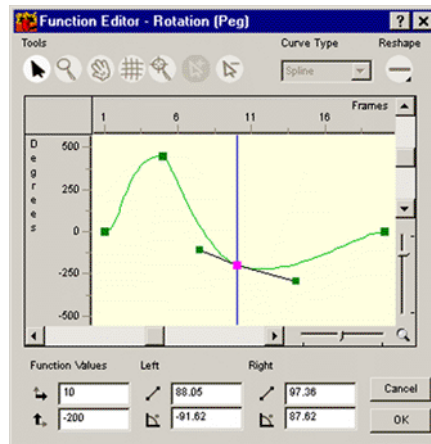
You add key frames to a plotline in either the Function Editor or in the 1D Editor when you want to create an effect.

Here are two examples of when you would add a key frame to a plotline.

Example 1: Function Editor

Let's say that you have an object that you want to rotate to 450 degrees to the right between frames 1 and 5. Then, rotate 200 degrees to the left and finally back to zero rotation.

After you attach the element to a peg, you would access the Function Editor from the Rotation tab, add key frames at each frame, and then change the rotation value of the key frames to the desired rotation angle.

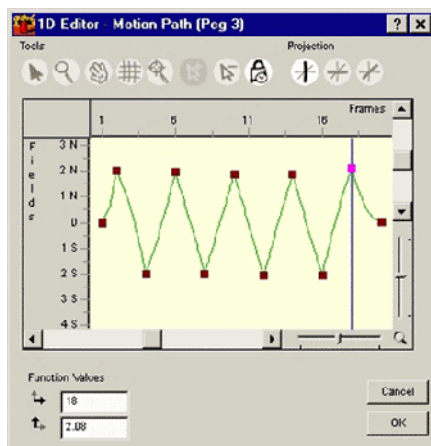


This plotline represents the rotation of the element over 20 frames

Example 2: 1D Editor

For this example, let's say that you want your character to jump up and down in place.



Open the 1D Editor from the Motion tab. In the north/south projection of the plotline, add key frames at each frame where you want the character's motion to be up or down. Then, move the key frames on the plotline to create the jumping effect.



In this plotline, you can see how the peg changes north/south position.

This path would be difficult to edit in the Camera View window because it repeats on itself. The 1D Editor is the perfect tool for editing this type of motion path because it isolates motion in a particular dimension.

To add key frames to a plotline and change their value, follow these steps:

1. Select the frame on the plotline where you want to add a key frame. You can use one of the following methods.
 - Activate the **Select**  tool from the **Tools** panel and click the frame in the plotline.
 - Type the value in the x-axis field of the **Function Values** panel.
2. Click the **Add**  button in the **Tools** panel.

The key frame appears at the frame number you selected. Now you can change the value of the key frame you added.

3. Click and drag the point to the new y-axis value. Notice that the y-axis value changes in the **Function Values** panel. To get a more precise value, you can type the value in this field.

The shape of the curve you create reflects the speed of the effect you are creating.

- In the **Function Editor**, you can change the shape of the plotline to create different velocity effects (like ease-in and ease-out).
- When you are working with an effect in the **1D Editor**, you can modify the speed of a change by accessing the **Function Editor** from the **Velocity** tab.

See Also

Changing the Velocity of a Motion Path on page 287








Reshaping the Plotline in the Function Editor on page 315


Changing Your View of the Editor Window on page 317

Reshaping the Plotline in the Function Editor

You can change the shape of the plotline in the Function Editor when you want to change how quickly an effect (such as rotation, scale or velocity) is applied to the peg and other elements attached to it.


The Function Editor provides pre-set reshape functions that you can apply to your plotline to change its shape. For example, if you wanted an effect to ease-in and ease-out, you could use one of the ease functions to change the plotline.

- **Constant:**  applies the value you have selected on the horizontal axis (y-axis) to the segment or plotline.
- **Ease in/out** : applies a gradual acceleration to the beginning, and a gradual deceleration to the end, of the segment or plotline.
- **Extreme ease in/out** : applies a more gradual acceleration to the beginning, and a more gradual deceleration to the end, of the segment or plotline.
- **Linear:**  applies a constant change to the segment or plotline.
- **Fast in/out** : applies a fast acceleration to the beginning and end of the segment or plotline.
- **Extreme fast in/out** : applies an even faster acceleration to the beginning and end of the segment or plotline.
- **Slow acceleration** : applies a slow acceleration to the segment or plotline.

- **Slow deceleration** : applies a fast acceleration to the segment or plotline.

You can also make changes to the shape of your plotline manually. However, when you use the pre-set functions in the **Function Editor**, **Toon Boom Studio™** does the work for you!

To reshape the plotline in the Function Editor using the Reshape Functions, follow these steps:

1. Click the **Select**  button in the **Tools** panel.
2. Select the segment of the plotline you want to reshape.
 - If you want to reshape only one segment, click anywhere along the segment.
 - If you want to reshape all segments on the plotline, click anywhere on the plotline.
3. To create segments on the plotline, you must add key frames.
4. Decide if you want to apply a change to a segment or the whole plotline.
 - To reshape only the segment you selected, select any of the options in the **Reshape** menu.
 - To reshape all segments in the plotline with the same function, press [Ctrl] and select one of the options in the **Reshape** menu.

To manually reshape the plotline in the Function Editor, follow these steps:

1. Click a key frame on the plotline. Handles appear on either side of the point you select.
2. Decide if you want to move both handles independently of each other or together.
 - To move a handle independently of the other handle, drag the point at the end of the handle to its new position.
 - To move both handles together, press [Alt] and drag the points to their new position.

The **Left** and **Right Handle**  and **Angle**  fields also display the position and the angle of the key frames. You can also use these fields to set precise position/angles.





See Also

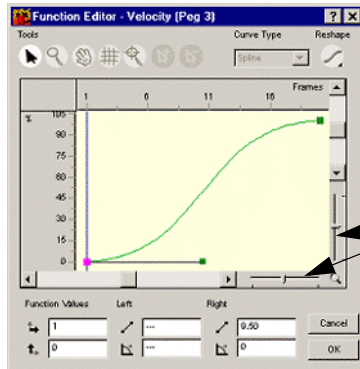
Adding Key Frames and Changing their Value on page 313
Changing Your View of the Editor Window on page 317

Changing Your View of the Editor Window

As you plot values for the selected peg, you can change how the Editor window displays the plotline and what it represents. You can change the scale of the vertical and horizontal axes, change the zoom detail on the plotline, or view a different section of the plotline itself.

To change your view of the Editor window, use any of the following tools:

- **Zoom**  tool: you can increase the detail on the plotline by either clicking on a general area or drag-selecting an area to view. To zoom out, press [Alt] and click the plotline.
- **Fit**  button: resizes the view in the **Editor** window so that the plotline fills the viewable space.
- **Grabber**  tool: you can view another part of the window by grabbing a part of the plot area and dragging to another place.
- **Grid**  button: you can toggle a grid that appears behind the plotline to mark each notch on the horizontal and vertical axes.
- **Horizontal/Vertical** zoom sliders: you can change the detail level in the horizontal and vertical axes and see more or fewer values.



Dragging the zoom sliders changes the horizontal or vertical zoom factor.

Chapter 9

Using the Multiplane Camera

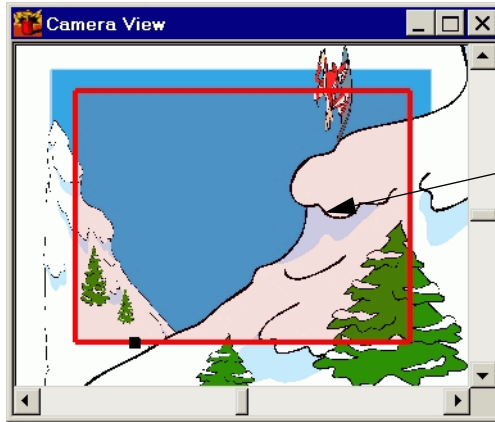
This chapter explains how to use the scene camera. You'll learn how to change the static properties of a camera as well as how to change its properties over time.

In this chapter, you will learn how to:

- Camera Effects with Toon Boom Studio on page 320
- Adding Cameras to a Scene on page 322
- Zooming the Camera In or Out on page 327
- Zooming the Camera Over Time on page 329
- Panning and Trucking the Camera on page 336

Camera Effects with Toon Boom Studio

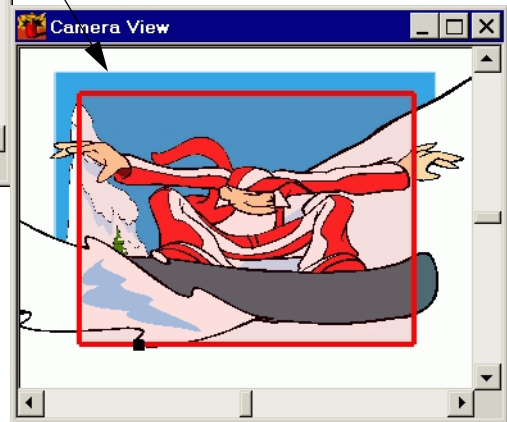
Like traditional animation, cameras in **Toon Boom Studio™** capture a view of your scene that will playback for your audience. You can use cameras to frame your scenes just as you do when you take a picture or film a movie.



In this scene, the camera pans across the scene to follow the snowboarder.

The Camera View window shows you how the scene looks to your camera.

The red tint and frame identify the camera when you select it.



With **Toon Boom Studio™**, you can:

- Reposition cameras
You can reposition a camera to get a specific view of a scene. For example, if you want your audience to view the action in the center of a large forest scene, you would reposition your camera to view only that area of the scene.
- Zoom cameras in or out
You can change the field-of-view (FOV) of the camera for the entire duration of the scene. If you wanted your whole scene to focus on the face of one character as she spoke, you could set the zoom level of the camera to exclude all other characters and action in your scene.
- Zoom cameras dynamically throughout your scene

You can also change the zoom level dynamically throughout your scene to create complex zooming effects. For example, you can start a scene with a close-up of a character and then zoom-out to see all of the action in your scene.

- Pan cameras across or up and down your scene, or truck cameras in and out. Creating pans and trucks with the camera is a breeze when you attach cameras to pegs and then create motion effects on the pegs. You can create the effect of moving through your scene by attaching a camera to a peg and then giving the peg front to back motion through your scene.

To add camera effects to your scene, you must be in Sceneplanning Mode.

To switch to Sceneplanning Mode:

- Click the **Sceneplanning Mode**  button or select **View > Sceneplanning Mode**.

If you are already in **Sceneplanning Mode**, the command in the **View** menu reads as **Drawing Mode**.

See Also

Adding Cameras to a Scene on page 322
Zooming the Camera In or Out on page 327
Zooming the Camera Over Time on page 329
Panning and Trucking the Camera on page 336
Basic Sceneplanning Concepts on page 238
Changing Elements Over Time with Pegs on page 260

Adding Cameras to a Scene

Toon Boom Studio™ adds a camera element, which you can zoom, pan and truck, to all of your scenes.

You can create additional cameras in your scene to try different framing. After you add a camera, you use the Camera drop-list in the Scene View toolbar to select the camera you want to use to see your scene and to change the framing of that camera. When you export your scene, **Toon Boom Studio™** films the scene from the perspective of the selected camera only.

There is also a default scene camera, which does not appear in the Timeline window. You cannot change the properties of the default camera. If you want to create any camera effects, you must add camera elements.

*When a secondary camera is offset from the main camera and you select it in the Timeline window, **Toon Boom Studio™** displays a cone, which represents the angle that the secondary camera has on the scene.*

To see exactly what secondary cameras see of your scene, you must select the camera from the Camera drop-list on the Scene View toolbar.



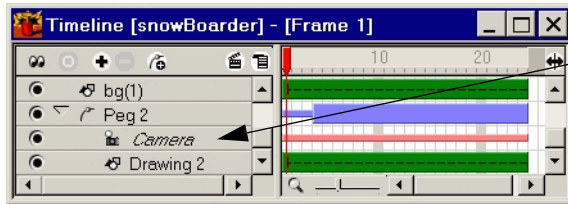
In these windows, the active camera is represented by the black square surrounding the snowboarder

In the window on the left, the secondary camera is represented by the black dot in the corner of the window.

To add a camera to the scene, follow these steps:

1. Select **Element > New > Camera Element**. You can also click the **Contextual Menu** button in the top-right corner of the **Timeline** window and select **New > Camera** from the pop-up menu.

A new camera element appears in the **Timeline** window and in the **Camera** drop-list in the **Scene View** toolbar. **Toon Boom Studio™** gives the camera a default name.



You can place the camera at any layer in the Timeline window.

The composition order of the camera in the **Timeline** window does not affect the output of your final movie.

2. Select the new camera from the **Camera** drop-list on the **Scene View** toolbar. The contents of the **Camera View** window changes to show the view this camera has.



This is the view that the secondary camera has of the same scene.

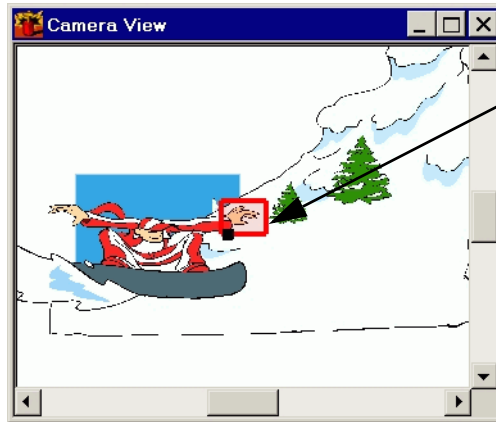
See Also

Adding Many Elements to a Scene on page 373
 Renaming Elements on page 379
 Deleting Elements on page 380

Positioning a Camera

You can change the north/south, east/west and front/back position of cameras you add to a scene just like you can change the position of any other element in Sceneplanning Mode.

If you wanted to see only the action that was taking place on the west side of your screen, you would add a new camera and move it so that it sees only that part of the scene.



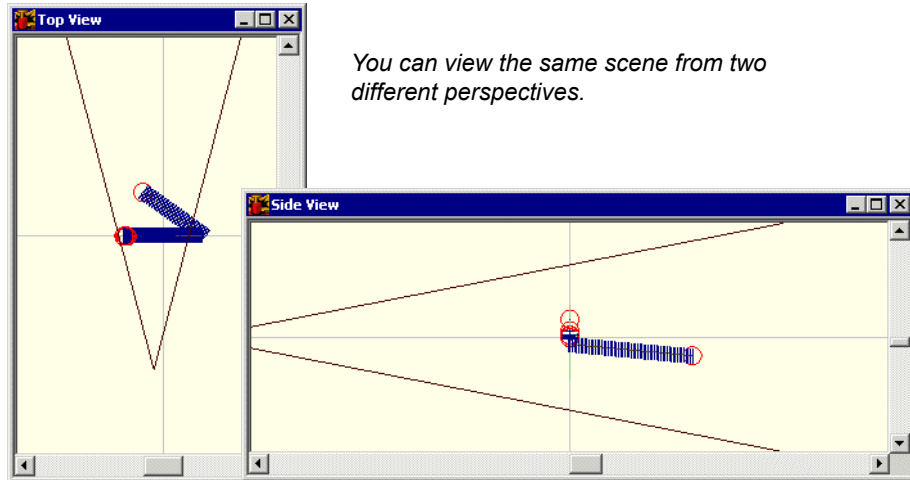
In the Camera View window you can change the north/south position of a camera by dragging up and down.

You can also change the east/west position of a camera by dragging from the left to the right.



You can change the position of a camera in any of the Sceneplanning View windows (Camera View window, Side View window and Top View window). The camera's field of view appears as a cone in the Top and Side View windows.


- In the Side View window, you change the front/back position of the camera by dragging from left to right. You change the north/south position of the camera by dragging from the top to the bottom.
- In the Top View window, you change the front/back position of the camera by dragging from the top to the bottom. You change the east/west position by dragging from left to right.



To change the position of a camera, follow these steps:

1. Add a new camera element to your scene.
2. From the **Window** menu, select the window to display.
 - Select **Camera View** to change the north/south and east/west position of the camera. You can also change the front/back position in this window by holding down [Alt] while you drag up (back) or down (front).
 - Select **Side View** to change the north/south and front/back position of the camera.
 - Select **Top View** to change the east/west and front/back position of the camera.

The camera in both the **Side View** and **Top View** windows is represented by a cone, which reflects the field-of-view that the camera has on the scene. The camera “films” all elements that are within the field-of-view.

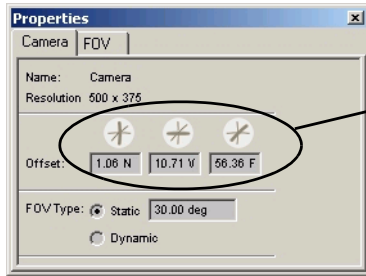
3. Select **Tools > Select** to activate the **Select**  tool.

4. Select the camera. Use one of the following methods:
 - Use the **Select** tool to click the camera frame in any of the View windows.
 - Click the camera's name in the **Timeline** window.
 - If the camera is an inactive secondary camera, you can click the dot that represents the camera to select and move it.

The camera's frame and field of view tints red when you select it.

5. Drag the camera frame to the position you want.

Notice that the Offset values in the Camera tab change as you move the camera. You can also manually type values into these fields to change the position of the camera.



The Offset fields record the north/south, east/west and front/back position of the camera.

You can type values in these fields to change the position of the camera.

See Also

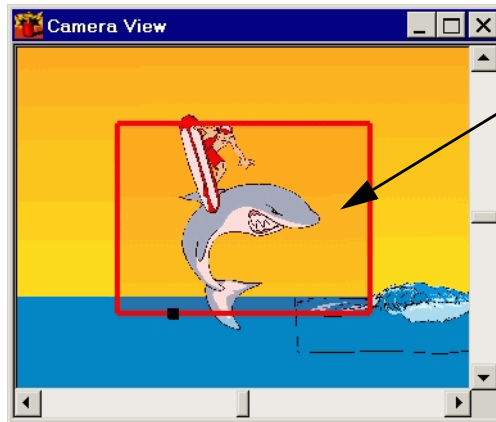
Adding Cameras to a Scene on page 322

Changing an Element's Start Time in the Timeline on page 402

Repositioning Elements on page 245

Zooming the Camera In or Out


You change the field-of-view (FOV) of a camera when you want to zoom the camera in or out on a character or object in your scene. Use the Camera View window to make changes to the FOV of a camera and see how the change affects the framing of your scene.



In this scene, we've changed the zoom level of the camera to focus on the surfer and the shark.

When you want to give the camera one zoom level for the entire scene, your zoom level will be static. You can also create dynamic camera zooms throughout your scene.

To zoom a camera in or out, follow these steps:

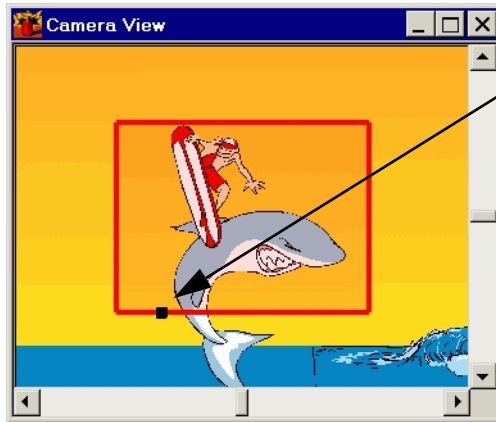
1. Add a new camera element to your scene.
2. Select the camera. Use one of the following methods:
 - Select **Tools > Select**, and use the **Select**  tool to click the camera frame.
 - Click the camera's name in the **Timeline** window.

In the **Camera View** window, the camera frame and background is highlighted in red. A handle appears on the bottom of the camera frame.

3. Select the **Static** option in the **FOV** tab in the **Properties** window.

When you select this option, the FOV of the camera stays constant throughout the scene.

4. With the **Select** tool, use the handle on the bottom of the camera frame to change the zoom level of the camera.
 - Drag the handle to the left to zoom-in on the scene.
 - Drag the handle to the right to zoom-out on the scene.



Drag the handle below the camera frame to change the zoom level of the camera.

As you change the zoom level, the value in the Static field on the FOV tab (in the Properties window) changes. You can also type a value in the Static field for a more precise FOV value.

When you change the FOV, you are actually changing the angle of view on your scene.

- If you make the field of view smaller, the camera represents a smaller amount of the full scene in the same size camera, which creates the zoom effect.
- If you look in the Top View window or in the Side View window as you change the field of view, you can see how the angle of your camera changes.

See Also

Adding Cameras to a Scene on page 322

Positioning a Camera on page 324

Changing the Start Frame and Duration of a Dynamic Camera on page 332

Creating Zoom Effects with the Function Editor on page 334

Zooming the Camera Over Time

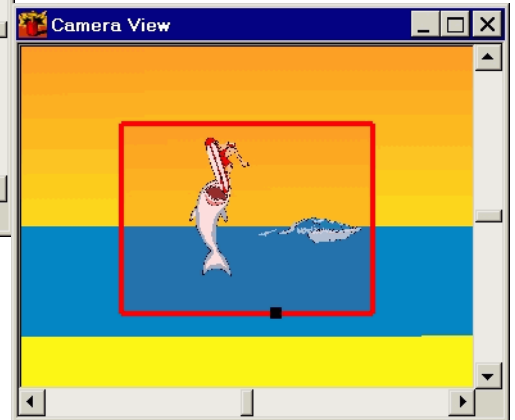
You can change the FOV of a camera at different frames throughout your scene to create dynamic camera zooms.

You can use the Camera View window to make changes to the FOV of a camera and see how the changes affect the zoom level of your scene.



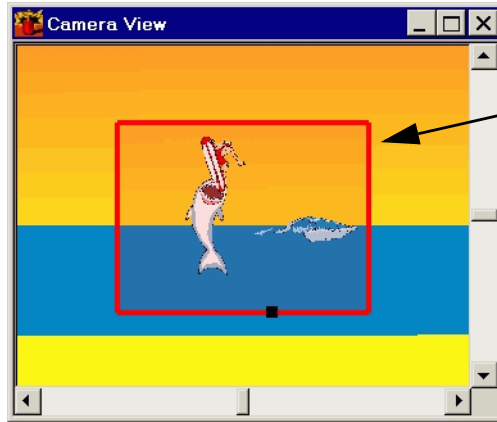
The camera zoom level in this animation changes from a close-up to a long shot.

Toon Boom Studio™ smooths the transition between camera zoom levels to create high-quality camera effects.



To zoom a camera in and out during a scene, follow these steps:

1. Add a new camera element to your scene.
2. In the **Timeline** window, select the camera you want to modify. The camera frame should appear in red in the Camera View window.



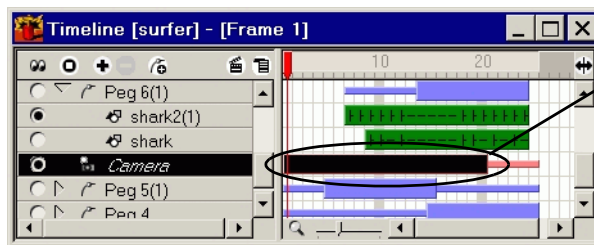
You can drag the handle below the camera frame to change the zoom level at specific frames.

3. On the **Camera** tab, select the **Dynamic** option.

When you select this option, you can change the zoom level of the camera at different frames throughout your scene.

4. Select the start and end frame, and the duration, of the zoom change.

When you activate the **Dynamic** option, a bar appears in the camera element in the **Timeline** window. This bar (set to 20 frames by default) represents the period (start and end frame, and duration) of the FOV change.

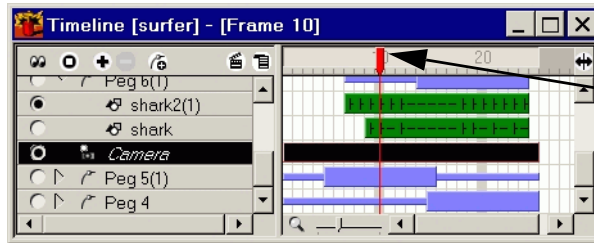


This bar reflects the start and end frame, as well as the duration, of the camera zoom changes.

- If you want your zoom changes to last longer than 20 frames, you must extend this bar.
- If you want your zoom changes to have a different start and end frame, drag the bar to the position you want it to occupy.

The camera uses the zoom level at the start and end of the zoom period for the camera zoom level before and after the zoom period.

5. Drag the red frame slider on top of the **Timeline** to select the frame at which you want the zoom to stop.



If you want a zoom to reach a certain level by frame 10, then you would move the red frame slider to 10.

6. With the **Select** tool, use the handle beneath the camera frame to change the zoom level of the camera.
 - Drag the handle to the left to zoom-in on the scene.
 - Drag the handle to the right to zoom-out on the scene.

You can also use the **Function Editor** to make more precise changes to the FOV.

See Also

Adding Cameras to a Scene on page 322
 Creating Zoom Effects with the Function Editor on page 334
 Zooming the Camera In or Out on page 327
 Changing the Start Frame and Duration of a Dynamic Camera on page 332
 Camera Effects with Toon Boom Studio on page 320
 Basic Sceneplanning Concepts on page 238
 Changing Elements Over Time with Pegs on page 260

Changing the Start Frame and Duration of a Dynamic Camera

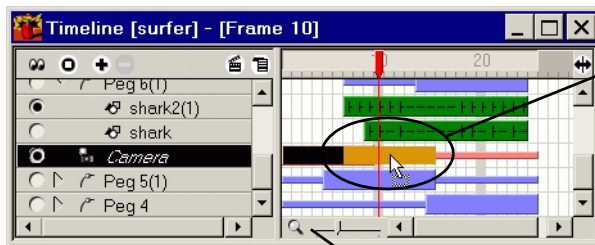
When you add a dynamic camera, it always appears at the first frame of the scene and covers a default length of 20 frames. If you need to make a dynamic camera effect last longer, you must modify the duration of the camera element in the Timeline window.

For example, if you want to link a zoom effect to a pan that is controlled by a peg, you should make the zoom effect last as long as the peg.

To modify the start/end frame and duration of a dynamic camera zoom, follow one of these steps.

To change the start/end frame of the camera, follow these steps:

1. Click the camera's bar in the right panel of the **Timeline** window.
2. Drag the camera bar to the correct position in the **Timeline** window. You may want to use the zoom slider at the bottom of the **Timeline** window to see more or less of the **Timeline**.



Drag the camera's bar to its new position.

Use the zoom slider to change the amount of detail you see in the Timeline window.

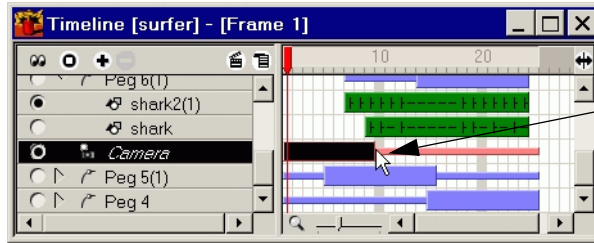


The thin red bar that appears in the Timeline window for all cameras indicates the duration of the camera's recording time in the scene. The red bar for the active scene camera increases or decreases based on the duration of all visible elements in the scene.

Even if the camera is dynamic for only a few frames (the length of the trackbar), it continues to record until the last frame where there is a visual element.

To change the duration of a camera effect, follow these steps:

1. Move the pointer to the end or the beginning of the camera bar in the right panel of the **Timeline** window.
2. Drag the boundary to the left or right to increase or decrease the length of the camera. A camera must always be at least two frames in length.



You can drag the ends of the camera bar to change the duration of the camera effect.

See Also

Adding Cameras to a Scene on page 322
 Changing the Timeline Zoom Level on page 366
 Splitting the Timeline Window into Two Sections on page 369
 Changing an Element's Start Time in the Timeline on page 402
 Sequencing Element Contents on page 386

Creating Zoom Effects with the Function Editor

You can use the Function Editor to create zoom effects that change precisely over time. To create zoom effects, you change the field of view (FOV) of the camera.

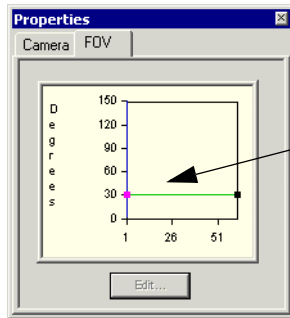
Let's say that you want your camera to repeat the same zoom changes over 60 frames. In the Camera View window, you can use the camera handle to change the zoom level, but you can not select exact FOV values with the handle. To do this, you must use the Function Editor.

To create precise camera zooms with the Function Editor, follow these steps:

1. Add a new camera element to your scene.
2. Select the camera element in the **Timeline** window.
3. In the **Camera** tab, select the **Dynamic** option for the **FOV Type**.

When you select the **Dynamic** option, you will be able to make the zoom level of the camera change throughout your scene.

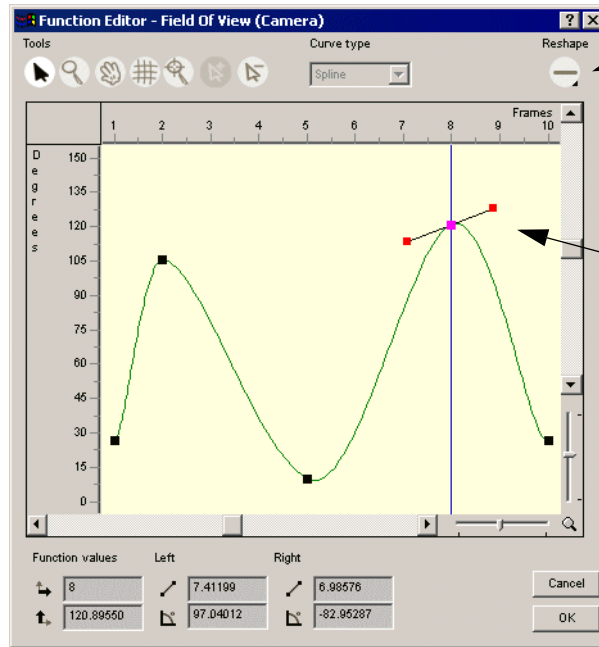
4. Change the start frame and duration of the camera.
5. Select the **FOV** tab and click the **Edit** button.



The graph on the FOV tab represents the change in the zoom level of the camera over time.

The **Function Editor** appears.

- The Y-axis (vertical axis) marks the angle of view that the camera has of the scene.
- The X-axis (horizontal axis) marks the frame number.



Change the speed of the zoom effect by changing the shape of the plotline.

You can select different plotline shapes from the Reshape panel.

Each point represents the angle the camera reaches at a specific frame number.

You can use the handles on each point to change the shape of the curve.

6. To change the angle of view of the camera, select the frame on the plotline where you want the zoom effect to change and add a key frame.

You can then move this key point to the angle of view you want. The shape of the plotline identifies the speed of the change in zoom.

7. To change the speed of the zoom, you can manipulate the shape of the plotline using options in the **Reshape** menu.

See Also

Reshaping the Plotline in the Function Editor on page 315

Adding Motion Points with the Motion Point Tab on page 275

Adding Cameras to a Scene on page 322

Changing the Start Frame and Duration of a Dynamic Camera on page 332

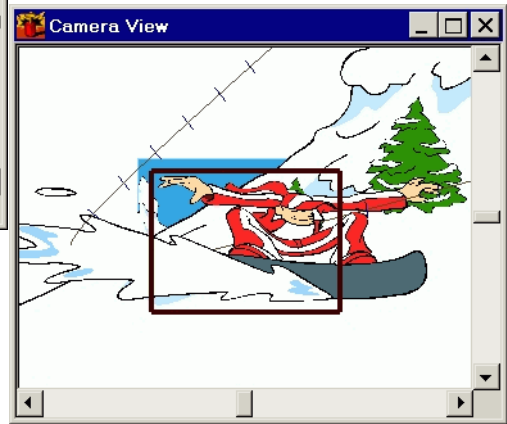
Panning and Trucking the Camera

You can create camera moves common in animation, like pans and trucks, using cameras and pegs. For example, you can change the area of the scene you are looking at by panning the camera. Or, you can move the camera into the scene (trucking) to create a sense of motion through the scene.

To create camera pans and trucks, you must attach the camera to a peg. Then, you must create east/west or north/south motion paths with the peg to create pans, or front/back motion paths to create trucks.

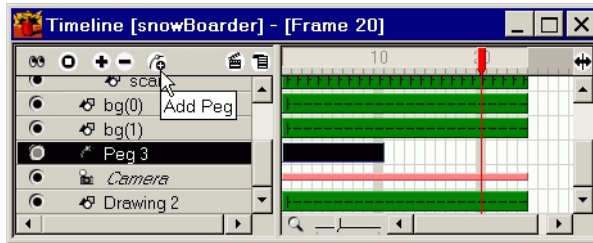


From the first frame to the last the camera follows the snowboarder all the way down the mountain.



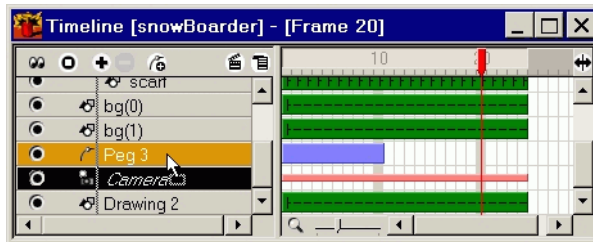
To pan and truck a camera, follow these steps:

1. Add a new camera element to your scene.
2. Add a peg to the your scene.



You can click the peg button just above the left column in the Timeline window to add a peg to your scene.

3. Change the start/end frame and duration of the peg to the values you want.
4. To attach the camera to the peg, drag the camera element on top of the peg element in the **Timeline** window.



Drag the camera on top of the peg to attach it to a peg.

5. Modify the peg to create north/south, east/west and front/back motion.

The camera follows the path of the peg through your scene. Cameras are affected by a peg's motion and rotation, but not scale.

See Also

Adding Cameras to a Scene on page 322
 Adding Many Elements to a Scene on page 373
 Changing an Element's Start Time in the Timeline on page 402
 Adding Pegs and Attaching Elements to Pegs on page 261
 Creating Motion Paths with Pegs on page 267

Chapter 10

Creating Effects

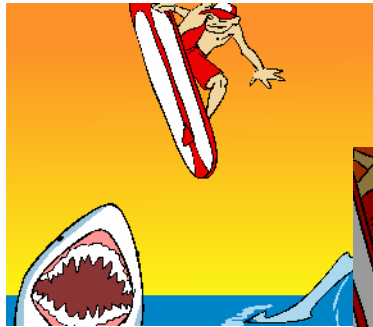
This chapter describes how you can add cool effects to your elements, creating interesting visuals, which your audience will enjoy, with ease and speed.

This chapter contains these topics:

- Additive and Multiplicative Color Changes on page 340
- Clipping Mask Effects on page 347

Additive and Multiplicative Color Changes

Various scenes you create may require the gradual change in color of characters or scenery because of changes to the lighting of the scene. If the sun is setting on a beach, the colors of all of the scenery on the beach are going to darken or even redden before they absorb a dark purple or blue tint.



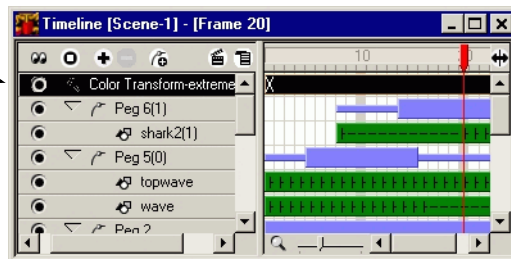
In this scene, the sun starts to set on the surfer, darkening all of the objects in the scene.

Watch out for that shark!



It would be quite time consuming to figure out the colors of each object in your scene at each frame, and then recolor each drawing at each frame (which traditional painters did have to do). With **Toon Boom Studio™**, you can automate colors changing over time by creating color changes in Color Transform elements and attaching all of the elements you want to transform to these effects elements.

Here's the Color Transform element in the Timeline window.



There are two types of color transformations you can create: **additive** and **multiplicative**.

- With **additive** color transformations, you can add or subtract color values from selected color channels (red, green, blue and alpha).

You would select an additive color transformation if you wanted to add or remove a color from your drawings over time.

For example, if a fire suddenly starts in front of a character, the character would reflect more and more red or orange as the fire starts and grows larger.

This ant is made up of the following RGB colors:

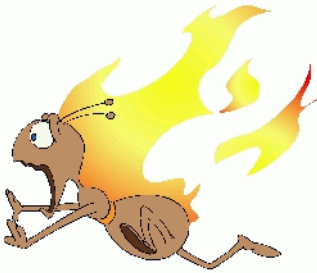
- Skin: 190, 140, 101
- Eye: 40, 97, 196
- "White" around the eye: 250 250, 229
- Belt: 245, 152, 31

If you create a Color Transform that adds 80 red to all of the colors, the red value in each color would increase by 80.

When you add 80 to the red channel in the colors of the ant, each red value increases while the values of the other channels remain the same.

- Skin: $190 + 80 = 270$ Red (the other colors remain the same)
- Eye: $40 + 80 = 120$ Red
- "White" around the eye: $250 + 80 = 330$
- Belt: $245 + 80 = 325$

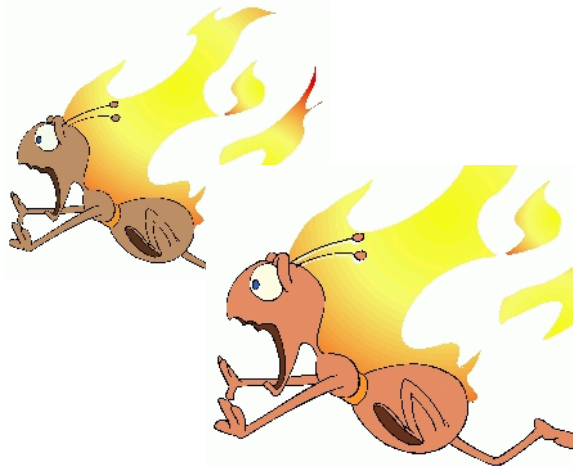
This ant is on his way to becoming one crispy critter, getting hotter and redder the longer the fire burns. Stop! Drop and Roll, Anty!



- With **multiplicative** color transformations, you multiply the current values in the color channels (red, blue, green and alpha) by selected values to create new color values.

You would select a multiplicative color transformation if you wanted to create an effect that changes all color channels evenly.

For example, if you wanted to increase the redness of an image by 20%, you would multiply the red value by 1.2.



The red values in this image are now:

- Skin: $190 * 1.2 = 228$
- Eye: $40 * 1.2 = 48$
- "White" around the eye: $250 * 1.2 = 300$
- Belt: $245 * 1.2 = 294$

You can combine additive and multiplicative color transformations. **Toon Boom Studio™** calculates the final value by first applying the multiplicative value and then the additive value. The formula looks like this:

$(\text{Color} * \text{Multiplicative Values}) + \text{Additive Values} = \text{Final Color}$

You may notice that the values of your color go beyond the 256 colors that are actually displayed. Although you only see colors with values between 0 and 255, **Toon Boom Studio™** saves the final value and uses it when you combine multiple Color Transforms.

See Also

Changing Color Over Time on page 343

Combining Multiple Color Transforms on page 346

Changing Color Over Time

You attach elements whose colors you want to change over time to Color Transform elements. Then, you change the properties of the Color Transform elements at selected key frames. **Toon Boom Studio™** calculates the color values of each image in an element at each frame for you. You can transform any visual element - drawing, image, or media.

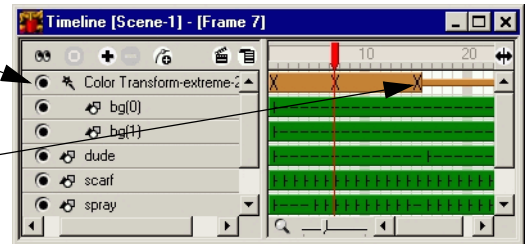
You can add/subtract values from the color channels or you can multiply the current color values by a value.

To change colors in elements over time, follow these steps:

1. In **Sceneplanning Mode**, select **Element > New > Color Transform Effect**. A new element layer appears in the **Timeline** window.
2. Drag the elements you want to change on top of the **Color Transform Effect** element. The elements appear indented below the **Color Transform** element.

Notice how the bg elements are indented below the Color Transform element. This means that they are attached to the Color Transform element and will be effected by the color changes you program in it.

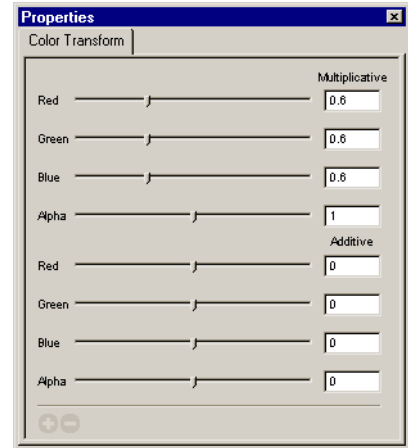
See the X's on the Color Transform trackbar? They are the key frames for the color change.



3. If needed, change the start time and duration of the **Color Transform** element.
 - Drag the entire trackbar of the element to a new start frame.
 - Drag the end of the trackbar to a new end frame.
4. Select the **Color Transform** element and use the red frame slider at the top of the **Timeline** window to select the key frame at which you want the color change to end. Notice that the **Color Transform** tab opens in the **Properties** window.

5. In the **Properties** tab, make your selections for the color transformation. Drag the slider or enter a value in a field. You can see the results of your changes immediately in the **Camera View** window.

- *In the multiplicative fields, you would usually enter a value between 0 and 2. In fact the slider only allows you to go from 0 to 2. You can enter a value less than 0 and greater than 2 in the fields.*
- *In the additive fields, you would usually enter a value between -255 to + 255. You can enter greater values in the fields.*
- *You will only see resulting color values that range from 0 to 255. If the final value is outside this range, **Toon Boom Studio™** saves the value and uses it for other calculations.*



If you nest color transformations in multiple Color Transform elements, the real value is used to calculate the combined effect.



When a color transform is applied on an image element or a vector element with a bitmap fill, what you see in the Camera View window will not be the same as the final rendered movie.

To evaluate color transforms applied to bitmaps, you must playback the rendered animation.

See Also

Adding/Removing Key Frames from a Color Transform on page 345
Additive and Multiplicative Color Changes on page 340
Additive and Multiplicative Color Changes on page 340
Combining Multiple Color Transforms on page 346
Real-Time Playback on page 431

Adding/Removing Key Frames from a Color Transform

Let's say that your character is holding her breath. Her skin color might go from pink to blue. Then if she got mad, her skin might go from blue to red!

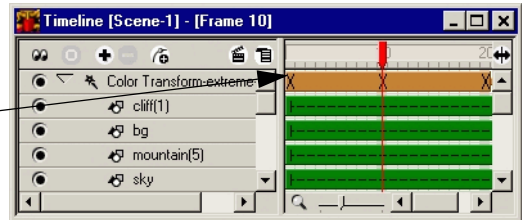
You can add key frames to Color Transform elements to change the color values of attached elements at different frames throughout your scene.

To add or remove key frames from a Color Transform element, follow these steps:

1. In the **Timeline** window, select the **Color Transform** element.
2. Select the frame at which you want to add a key frame using the red frame slider at the top of the **Timeline** window to change the frame number.
3. In the **Color Properties** tab, **Properties** window, click the **Add Key Frame** + button. A new **X** appears in the **Color Transform** element at the selected frame. You can now change the value of the color transformation.

Move the red frame slider to the frame number where you want to add a key frame.

Xs appear in the trackbar for each key frame.



4. To remove a key frame, select the **Color Transform** element, use the frame slider to select the key frame you want to delete, and click the **Remove Key Frame** - button on the **Color Properties** tab.



You can disable the display of color transform effects in the Camera View windows.

- Select **View > Effects > Disable All Effects**.

Effects will export regardless if you have this option selected.

See Also

Adding/Removing Key Frames from a Color Transform on page 345
 Additive and Multiplicative Color Changes on page 340
 Previewing a Scene Interactively on page 428
 Changing Color Over Time on page 343

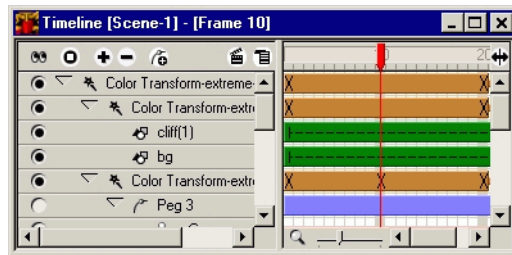
Combining Multiple Color Transforms

You can combine multiple Color Transform effects to control different color changes in your scene.

For example, if your character was blushing as the sun was setting, you would create one Color Transform effect for the blushing, and another for the effect of the setting sun on the whole scene.

Multiple color transformations are combined starting with the top Color Transform elements, working down.

In the Timeline, you can see how there are two Color Transforms that are secondary to a master Color Transform element.



To combine multiple color transforms, follow these steps:

1. Create the secondary **Color Transform** effect. The secondary effect is the one that will be influenced by the primary effect.
2. Create the primary **Color Transform** effect. This is the effect that will have influence over elements as well as other **Color Transform** effects.
3. Attach the secondary **Color Transform** effect to the primary **Color Transform** effect.

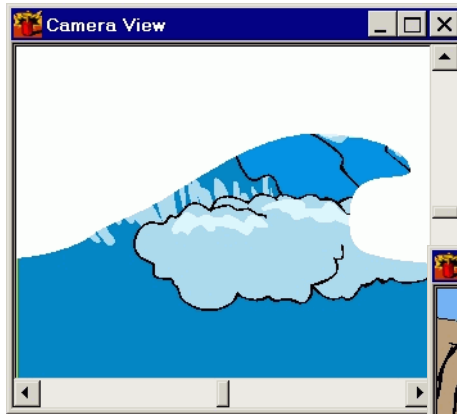
See Also

Adding/Removing Key Frames from a Color Transform on page 345
Previewing a Scene Interactively on page 428
Clipping Mask Effects on page 347
Changing Color Over Time on page 343

Clipping Mask Effects

Ever been to a costume party where the only thing you see beneath the masks of the other guests is their eyes and mouth? The costume mask hides all of the face, except those parts revealed by the holes for the eyes and the mouth.

You can create a very similar effect with moving images by hiding parts of images (the clip) below a mask. This effect can create some interesting visual results because you are no longer constrained by the rectangular shape of your camera to frame for your images.



The mask in the image to the left is shaped like a wave to reveal a clip of a wave washing over a beach.

Combining the clipping mask effect with other elements can create interesting transitions between material.



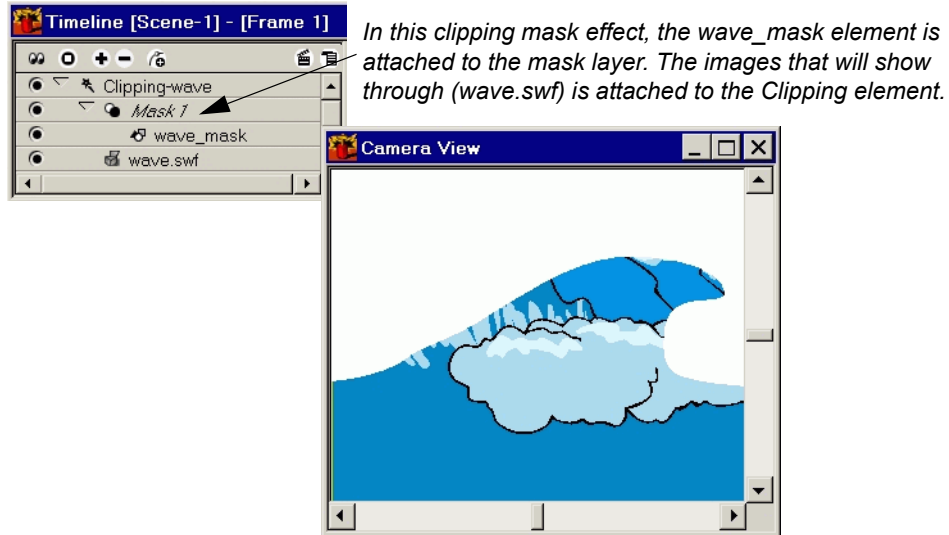
See Also

Creating Clipping Mask Effects on page 348
 Additive and Multiplicative Color Changes on page 340
 Modifying Masks on page 351

Creating Clipping Mask Effects

With **Toon Boom Studio™**, you can create masks that allow part of an image to appear through a shape. To create this clipping mask effect, you must create a vector shape and attach it to the effect's mask parameter. Then, you attach the images you want to see through the mask to the clipping element.

Centerline strokes cannot be masks; only Brush strokes and painted areas can be masks.



When displaying the clipping mask, the composite elements are rendered into one layer. The top element inside the clip establishes the layering order with other elements in the scene and the mask layer establishes the foreground/background property of the entire rendered effect. To change the depth of the clipping effect, you must move the top element in the clip.

You can mask drawing or image element types. You can also resize, rotate or move your masks dynamically with pegs, like you do other element types.

To create a clipping mask effect, follow these steps:

1. In **Drawing Mode**, create a drawing element and draw the shape you want to use for the mask, and fill the regions you want to use to show the layers below the mask. This is opposite the concept of the party mask because it is actually the areas that are filled with paint that will show through the bottom layers.
2. Switch to **Sceneplanning Mode**.
3. Select **Element > New > Clipping Effect**. Two element layers appear in the **Timeline**, the **Clipping Effect** layer and the **Mask** layer. The Mask layer is a parameter of the Clipping Effect layer and as a result you cannot move, rename or delete it.
4. Drag the drawing element you created to be the mask on top of the **Mask** layer. When it is attached, the drawing element is indented below the **Mask** layer.

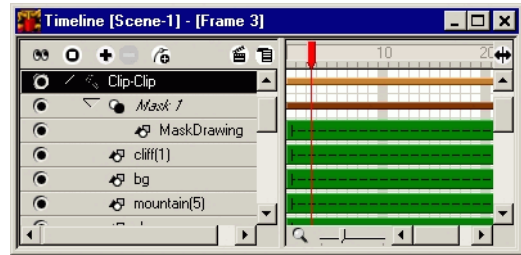
You can add multiple elements to the **Mask** layer. However, only the top visible drawing element will be used as the mask. Other drawing elements will be ignored in the calculation of the mask.

If you only want the mask to hide a part of the clip for a segment of the clip's duration, you must create a large drawing that will reveal the full clip for the duration of its exposure. If there is no drawing in the mask layer, then **Toon Boom Studio™** assumes that all of the holes in the mask are filled, and that there is nothing that you want to see beneath it.

5. Drag the elements you want to mask on top of the **Clipping Effect** layer. The masked elements are indented below the **Clipping Effect** layer.

You must drag the mask you want to use (the vector drawing with painted zones identifying the areas you want to show through) on top of the Mask element.

Then you drag all elements you want to be affected by the mask on top of the Clipping Effect element.



You can disable the display of mask effects in the Camera View windows.

- Select **View > Effects > Disable All Effects**. Effects will export regardless if you have this option selected.

In the Timeline window, you can also hide the mask layers beneath a Clipping Effect element to make it easier to work with elements.

- To hide the mask layers in all Clipping Effect elements, select **View > Effects > Hide All Effects Parameters**.
- To show the mask layers in the selected Clipping Effect element, **View > Effects > Show Effect Parameters**.
- To show the mask layers in all Clipping Effect elements, select **View > Effects > Show All Effects Parameters**.

See Also

Changing Elements Over Time with Pegs on page 260
Previewing a Scene Interactively on page 428
Additive and Multiplicative Color Changes on page 340
Modifying Masks on page 351

Modifying Masks

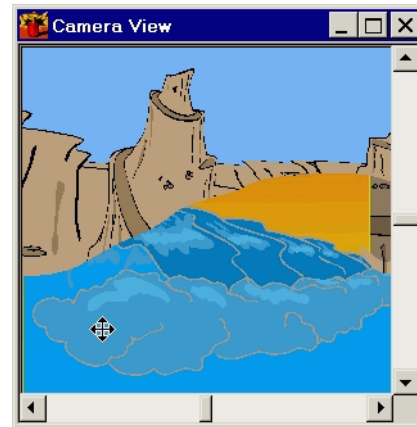
You can change the rotation and size of masks just like you would any other element in Sceneplanning Mode. You can even use pegs to change masks dynamically throughout the scene.

However, if you just want to reposition a mask, it can be a little bit tricky. In the following example, the clip image fills the mask. If you try to move the mask as it is set up now, **Toon Boom Studio™** will move the clip. To move the mask, you must hide the clip.



This is a mask created from a drawing of a wave, which is revealing an image of a wave beneath it.

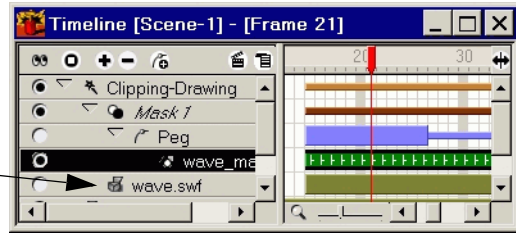
If you try to move the mask, you will end up moving the clip beneath it.



To move a mask, follow these steps:

1. Use the Show/Hide buttons in the element list to hide the clip layer.

We hid the wave.swf media element, which is the clip in this effect.



2. Use the **Select**  tool to move the mask.



3. Show the clip layer so that you can see the layers beneath the mask.



Here's a tip that also helps with the selection and modification of masks.

1. Add a peg and move it just outside of the mask's area.
2. Attach the mask to the peg.
3. Use the circle that represents the peg as a handle for moving the mask.

See Also

Repositioning Elements on page 245

Scaling Elements on page 250

Rotating Elements on page 255

Changing Elements Over Time with Pegs on page 260

Chapter 11

Organizing Elements

This chapter explains how to organize the element layers in your scene, as well as work out the sequence and timing of contents.

This chapter contains the following topics:

- Exposure Sheet and Timeline Windows on page 354
- Layering Elements on page 371
- Sequencing Element Contents on page 386
- Timing/Exposing Drawings and Images on page 401

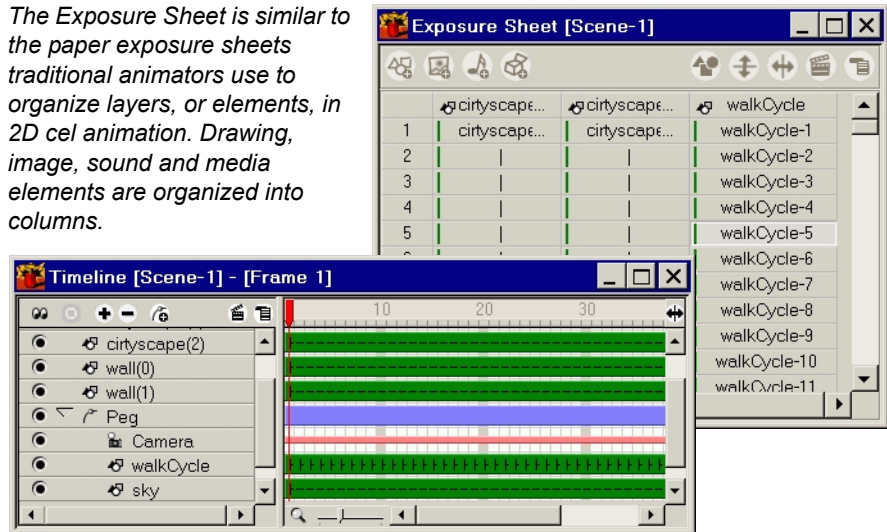
Exposure Sheet and Timeline Windows

The Exposure Sheet and Timeline windows are your worksheets for organizing, sequencing and timing the contents of your animation. Although both the Exposure Sheet and the Timeline serve similar purposes, they display layering, sequence and timing information differently because of the functions you perform in the different modes.

- In Drawing Mode, you build the content of your animation by drawing and importing media. You use the Exposure Sheet to track the content of each element, as well as establish the order and timing of each item.
- In Sceneplanning Mode, you use the Timeline window to add effects to entire elements, as well as establish their final composition order. You can change the order and timing of element contents in the Timeline, but you cannot create new visual content in this mode that you will need to manage frame-by-frame.

The Exposure Sheet is similar to the paper exposure sheets traditional animators use to organize layers, or elements, in 2D cel animation. Drawing, image, sound and media elements are organized into columns.

In Sceneplanning Mode, the Timeline window organizes the elements of your scene into rows.



See Also

Showing/Hiding Elements on page 355
 Adding Element/Cell Notes on page 360
 Changing the Cell Display in the Exposure Sheet on page 363
 Changing the Timeline Zoom Level on page 366

Showing/Hiding Elements


Sometimes it helps to hide a couple of elements so that you can focus on the ones you are working on.

- If you are in Drawing Mode, you may want to hide elements so that you see only specific layers in the Auto Light Table.
- If you are in Sceneplanning Mode, you may want to hide elements so that it is easier for you to lay out others in the 3D scene space.

When you hide elements, they will also not show in your animation when you render for playback or export.

You can show/hide elements using the commands in the **Element > Display** menu. You can also use the Show/Hide buttons in the Exposure Sheet and Timeline windows.

To show/hide elements in Drawing Mode, follow these steps:

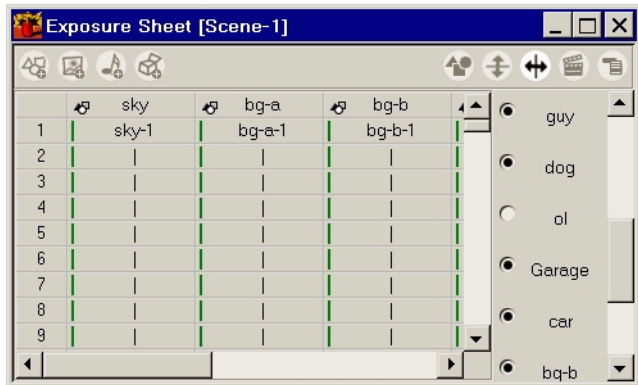
1. In the **Exposure Sheet**, click the **Toggle Element List**  button to open the **Element List** panel.
2. Click the radio button next to the element name in the **Element List** panel.
 - When the button is selected, the element appears in the **Drawing View** and **Exposure Sheet** windows, and in your rendered animation.
 - When the button is deselected, the element does not appear in the **Drawing View** and **Exposure Sheet** windows, or in your rendered animation.



When you have hidden pegs, you can show them without changing their show/hide status in the element list in the Timeline window.

- Select **View > Peg > Show Pegs**. All pegs become visible in the View windows.
-

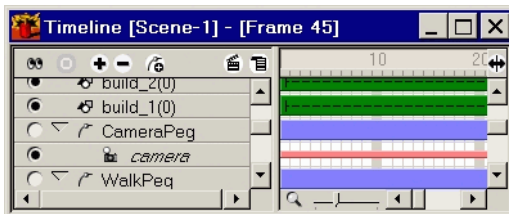
Use the Show/Hide buttons in the Element List panel to select the elements you want to appear in Drawing Mode.



To show/hide elements in Sceneplanning Mode:

- Click the radio button next to the element name in the **Element List** panel.
 - ⇒ When the button is selected, the element appears in all of the **View** and in your rendered animation.
 - ⇒ When the button is deselected, the element does not appear in the **View** windows or in your rendered animation.

Use the Show/Hide buttons to select the elements you want to appear in Sceneplanning Mode.



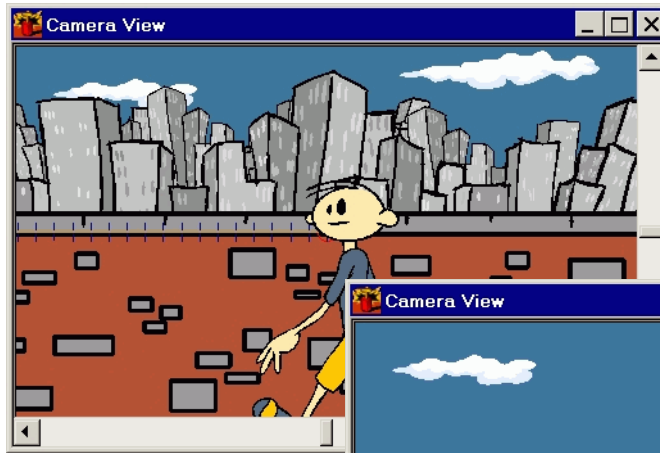
See Also

Changing Layering Order in the Exposure Sheet on page 375
Changing Layering Order in the Timeline on page 377
Exposure Sheet and Timeline Windows on page 354
Organizing Elements on page 353

Displaying Selected Elements Only in Sceneplanning

In Sceneplanning Mode, all your elements that are visible at the selected frame (indicated by the frame marker) appear in the View windows. This is unlike the Drawing View window in Drawing Mode that only displays the selected cell in a single element at the current frame.

If you want to work on a single element or set of elements, you would need to hide all the unrelated elements and then re-display them later. That doesn't sound like a big deal, but if you have many elements, it can be time consuming.




When you just want to work on the motion path of a particular character, you don't need to see all of the other elements in a scene.

Now that some of the elements are hidden, you can see the motion path of the character clearly.



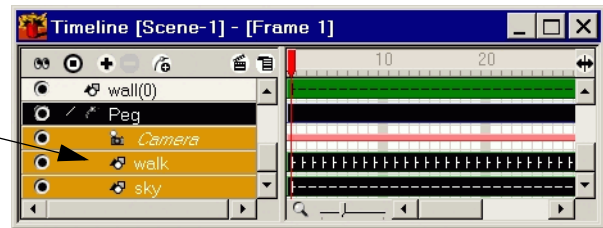
Toon Boom Studio™ allows you to hide all other elements except the ones you select using Solo mode. When this mode is active, it temporarily hides all unselected elements from the View windows, allowing you to work on only the elements you want.

To hide elements in your View windows with Solo mode, follow these steps:

1. Select the element(s) you want to show. You can either select a single element or a range of elements (using [Shift] + click).
2. Click the **Solo mode**  button located at the top-left of the **Timeline** window.

When **Solo mode** is active, the **Solo mode**  button appears inverted and the hidden elements appear grayed-out in the **Timeline** window.

Only these highlighted elements will appear in the View windows.



When you are in Solo mode, you can still display or hide elements from the View windows:

- If you want to temporarily display an element that is not one of the selected elements, select it in the Timeline window.
- You can use the Show/Hide buttons to hide or display elements currently in the Solo mode.

See Also

Exposure Sheet and Timeline Windows on page 354
Deleting Elements on page 380

Showing/Hiding Peg Attachments

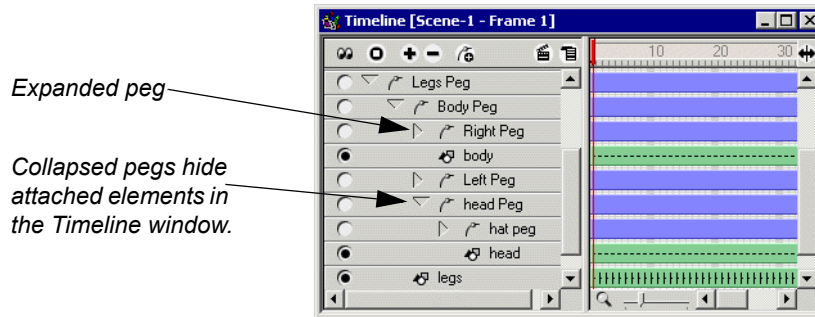
When you are building your peg hierarchies in the **Timeline** window (which links related elements together), the peg hierarchies can get pretty deep and extensive, taking up quite a bit of space in your window.

That's why **Toon Boom Studio™** allows you to expand or collapse the contents of your pegs in the Timeline window. By default, pegs are always expanded which displays all the elements attached to it.

To make more room available in the Timeline window, you can collapse a peg which hides its attached elements from view. However, the contents of a collapsed peg still appears in your scene and View windows.

To collapse or expand a peg:

- click the arrow next to the peg element in the **Timeline** window.



When the arrow points downward, the peg displays the attached elements. When the arrow points to the right, the peg hides the attached elements. This arrow doesn't appear until you attach something to the peg.

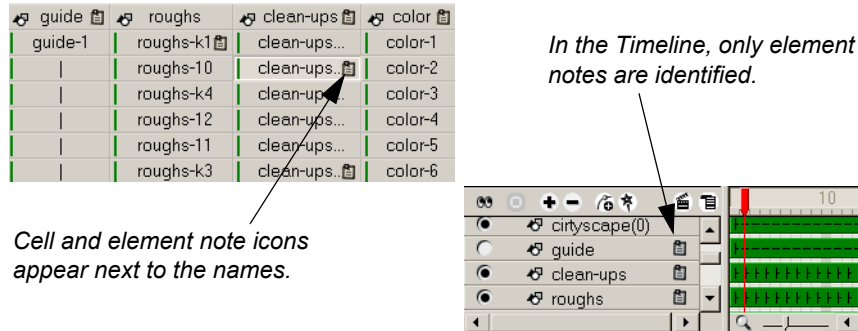
See Also

Exposure Sheet and Timeline Windows on page 354
Changing Elements Over Time with Pegs on page 260

Adding Element/Cell Notes

With a paper exposure sheet, animators can scribble notes on the paper about the elements in the scene and the action.

Toon Boom Studio™ makes it possible to add electronic notes to your elements and cells so that you can record and save ideas about your animation.



If you clone an element, **Toon Boom Studio™** also clones all of the element and cell notes. However, if you copy and paste an annotated cell, the note does not appear on the pasted cell.

To add a note to an element or a cell, follow these steps:

1. Select the element or cell you want to add a note to.
You can select an element in either the **Exposure Sheet** window or in the **Timeline** window. However, you must use the **Exposure Sheet** to add cell notes.
2. Select one of the following commands.
 - To add an element note, select **Element > Insert Element Note**.
 - To add a cell note, select **Element > Cell > Insert Cell Note**.

The **Note** dialog box opens.

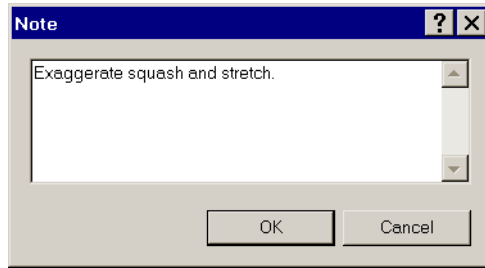
3. Type the note you want to add to the element/cell and click **OK** when you are done.

The element or cell displays a small note icon to identify the note.

To update an element or cell note, follow these steps:

1. Select one of the following commands.
 - To add an element note, select **Element > Insert Element Note**.
 - To add a cell note, select **Element > Cell > Insert Cell Note**.

The **Note** dialog box opens.



2. Update the note and click **OK**.

If you remove all of the text from the note, **Toon Boom Studio™** will delete it.

See Also

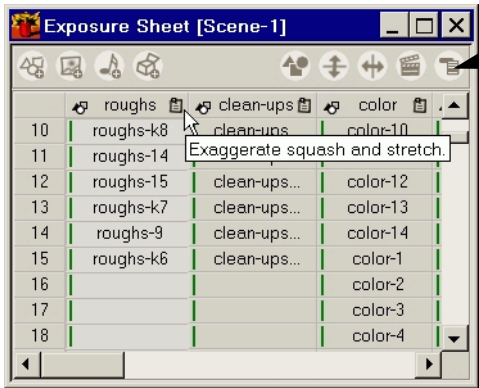
Viewing Cell and Element Notes on page 362

Viewing Cell and Element Notes

You can view element and cell notes in Drawing Mode, but you can only view element notes in Sceneplanning Mode because you cannot see individual cells in this mode.

To view a cell or element note:

- Pass your pointer over the note. The contents of the note will appear in a pop-up.




You can show/hide notes by clicking the Contextual Menu button and selecting View > Notes.

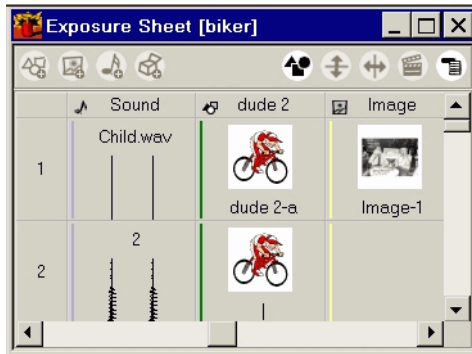
See Also

Adding Element/Cell Notes on page 360
Cloning Elements on page 381

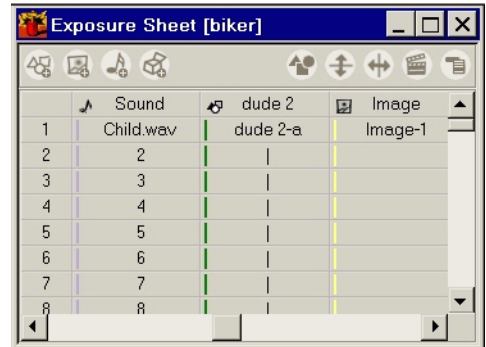
Changing the Cell Display in the Exposure Sheet

You can customize how the Exposure Sheet window displays the contents of elements by clicking the Contextual Menu  button and selecting the option you want from the View menu. If the option is active, a checkmark appears next to it:

- **Thumbnails:** when active, a graphic representation of the contents appears. When deactivated, the cell displays only the cell name.



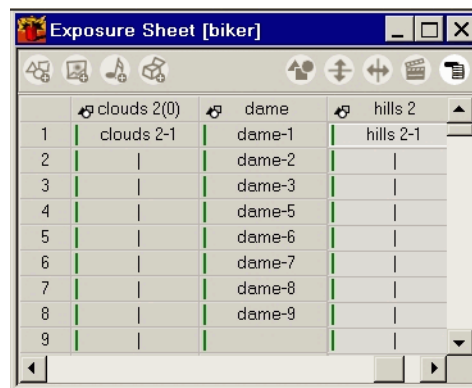
Thumbnails active



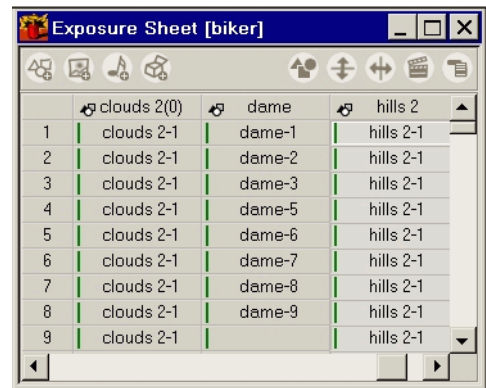
Thumbnails in-active

If the cell contains an image, drawing or media link, a thumbnail appears. If the cell contains a sound, the sound's wave form or an example of the lip position that would make the sound at that frame is displayed.

- **Exposure:** when active, a vertical line appears in the cells to indicate that the previous cell label applies to the current cell. When deactivated, the cell repeats the cell name for the length of the exposure.

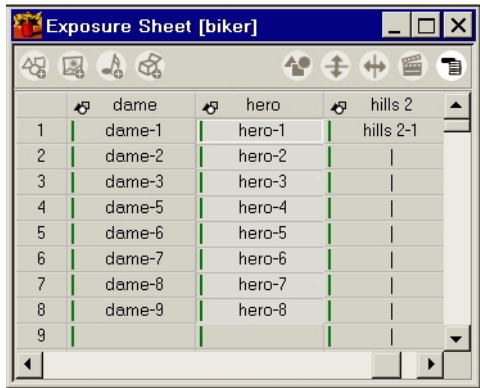


Exposure active



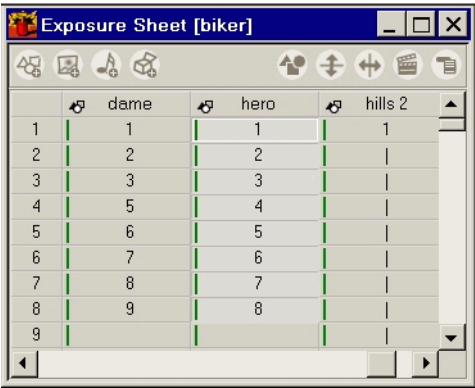
Exposure in-active

- **Named:** when active, the cell displays the name of the element before the cell name, which is often a number.
When deactivated, only the cell name appears in the cell.



	dame	hero	hills 2
1	dame-1	hero-1	hills 2-1
2	dame-2	hero-2	
3	dame-3	hero-3	
4	dame-5	hero-4	
5	dame-6	hero-5	
6	dame-7	hero-6	
7	dame-8	hero-7	
8	dame-9	hero-8	
9			

Named active



	dame	hero	hills 2
1	1	1	1
2	2	2	
3	3	3	
4	5	4	
5	6	5	
6	7	6	
7	8	7	
8	9	8	
9			

Named inactive

- **Show Notes:** when active, an element or cell annotation appears in a pop-up window when you place your pointer over the annotated cell.
When deactivated, the pop-up window does not appear. However, you can right-click on the element or cell and select **Update Cell Note** to view (or update) the note.

See Also

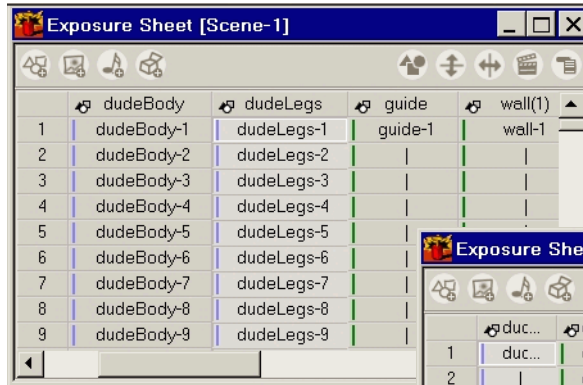
Creating Lip Charts Automatically on page 230
Resizing Columns in the Exposure Sheet on page 365
Adding Element/Cell Notes on page 360

Resizing Columns in the Exposure Sheet

You can adjust the width of columns in the Exposure Sheet window to make it easier to see more element columns or more of the names of elements and cells.

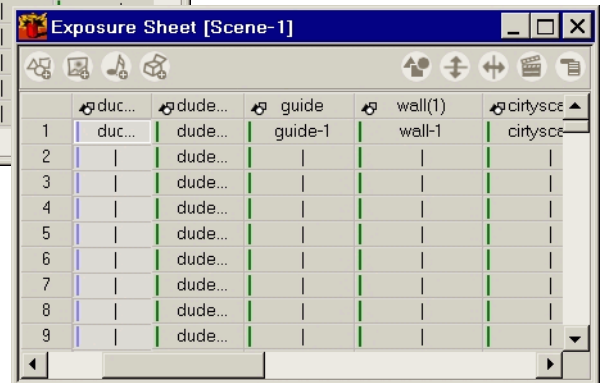
To resize columns in the Exposure Sheet window:

1. Drag the sides of the columns to their new size. You must drag the element title.



As you resize columns their titles, or the labels of their cells, might become hidden.

But, you can see more columns if the columns are narrow.



2. To reset the column width, click the **Contextual Menu** button and select **View > Reset Column Width**.

See Also

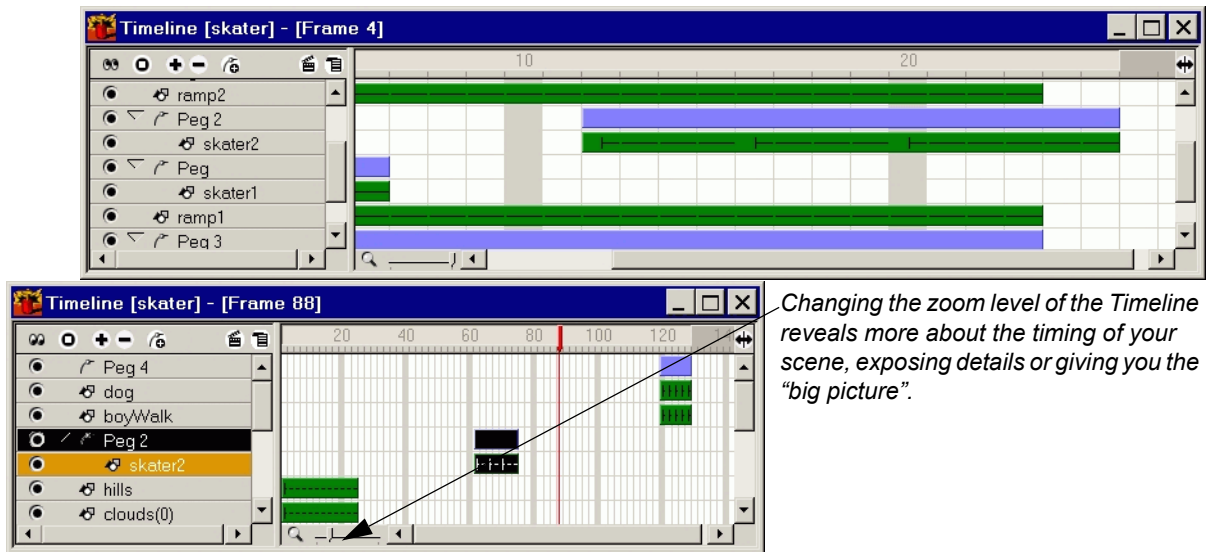
Changing the Color of an Element on page 383

Changing the Default Colors of Elements on page 384


Changing the Timeline Zoom Level

You can change the zoom level of the Timeline window so that you can see more of the timing of elements in the Timeline window or get a more global view of the scene.

For example, if you wanted to see when drawings in an element change, you can increase the zoom level until you can clearly see the vertical lines that represent new cells in the Timeline window.



To change the detail level in the Timeline window:

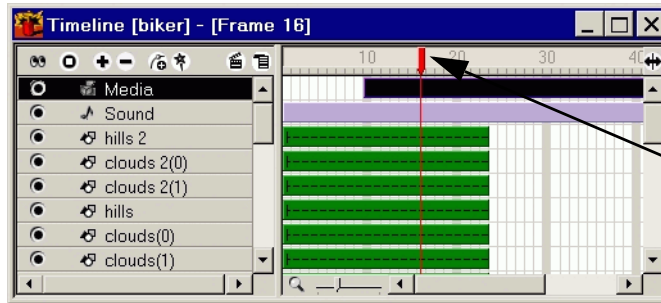
- Drag the **Zoom**  slider either to the left (zoom out) or to the right (zoom in). You'll notice that as you change the zoom level, the amount of detail changes in stages.

See Also

Changing the Current Frame in the Timeline on page 367
 Displaying Feet and Frames in the Timeline on page 368
 Splitting the Timeline Window into Two Sections on page 369
 Changing the Track Color in the Timeline on page 370

Changing the Current Frame in the Timeline

The frame marker in the Timeline window identifies the frame you are viewing. When you play your scene, the frame marker moves across the Timeline window.



The currently selected frame is indicated by the red frame marker and is in the title bar of the window.

To view the images at a specific frame, you can change the frame marker's position in the Timeline window.

To change the current frame, do one of the following:

- Drag the frame marker to the frame you want to view.
- Click the frame marker at the top of the **Timeline** window. The red frame marker appears at the point you click and the elements at that frame appear in the **View** window.
- To advance one frame, press [S]. To rewind one frame, press [A].
- Right-click the frame bar and select **Change current frame**.

In the **Change Current Frame** dialog box, type the frame number you want to see and click **OK**. The red frame marker now appears on the frame you selected and the elements at that frame appear in the **View** window.

See Also

Changing the Timeline Zoom Level on page 366

Displaying Feet and Frames in the Timeline on page 368

Splitting the Timeline Window into Two Sections on page 369

Changing the Track Color in the Timeline on page 370

Displaying Feet and Frames in the Timeline

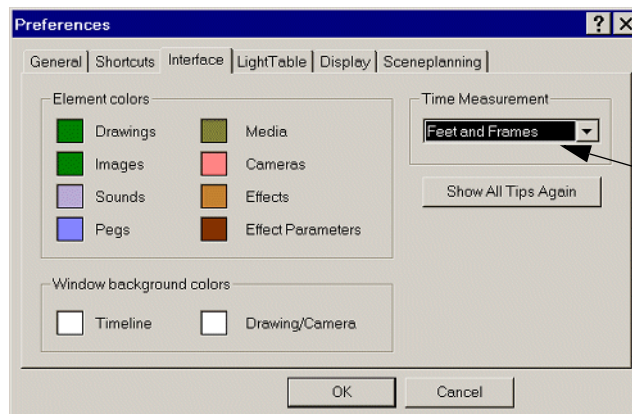
Traditional animation for TV and film is often measured in feet. The number of feet of film measurement is a handy way for animators to judge their output based.

There are 16 frames per foot of film.

If you are accustomed to working in a traditional environment, animating for film and TV, the “feet and frames” measurement on the Timeline window might be a more familiar reference point for you to use.

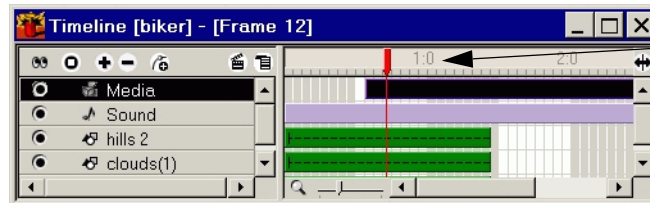
To display “feet and frames” in the Timeline window, follow these steps:

1. Select **Edit > Preferences**. The **Preferences** dialog box opens.
2. Click the **Interface** tab.



Select how you want the Timeline to mark time from the Time Measurement drop-list.

3. From the **Time Measurement** drop-list, select **Feet and Frames** and click **OK**.



When you are displaying “feet and frames” in the Timeline window, the first number indicates the number of feet and the second number indicates the number of frames in the current foot.

See Also

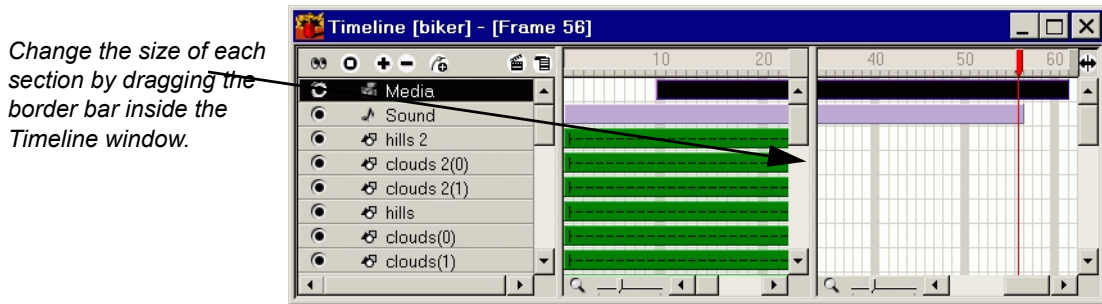
Changing the Timeline Zoom Level on page 366

Changing the Current Frame in the Timeline on page 367

Splitting the Timeline Window into Two Sections

You can use the Zoom 🔍 slider to view more or less of the Timeline window, but if your scene is very long, you would still have to use the slider to display the beginning and end of the scene.

That's why the Timeline window features the Split Window ⇄ button. This button allows you to split the Timeline window into two sections, allowing you to view two sections of the scene independently.



To split the Timeline window into two sections, follow these steps:

1. Click the **Split Window** ⇄ button in the top-right of the **Timeline** window. A border bar appears on the extreme right of the **Timeline** window.
2. Place your pointer over the bar that separates the two sections so that your pointer changes to a resize ⇄ pointer.
3. Drag the bar to its new position.

The new section of the **Timeline** window has its own scroll bars and **Zoom** 🔍 slider.

See Also

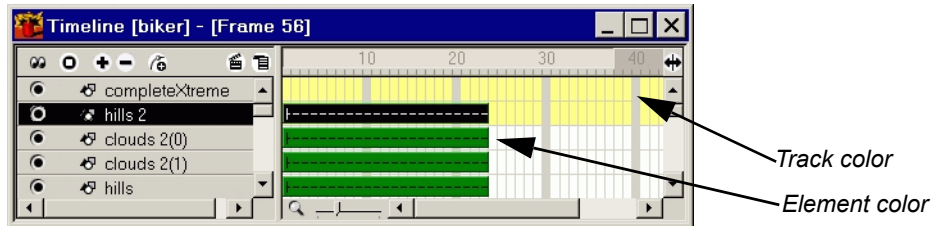
Showing/Hiding Elements on page 355

Changing the Current Frame in the Timeline on page 367

Changing the Timeline Zoom Level on page 366

Changing the Track Color in the Timeline

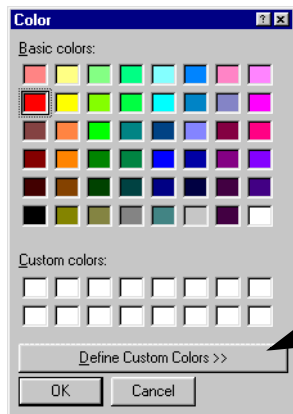
By default, the background color of tracks in the Timeline window is white, allowing for the highest contrast with the elements that appear on top of it.



You can change the background color of selected tracks in the Timeline window so that you can easily distinguish a specific element or a group of elements from others.

To customize the color of a track in the Timeline window, follow these steps:

1. Select the element whose track color you want to change.
2. Select **Element > Display > Default Color**. The **Color** dialog box opens.



*If the color you want to assign doesn't appear here, you can click the **Define Custom Colors** button to select from a wider range of colors.*

3. Select the color you want to use for the selected track and click **OK**.
4. To revert the track's color, select **Element > Display > Background Color**.

See Also

Changing the Color of an Element on page 383

Changing the Default Colors of Elements on page 384







Layering Elements

The layering order of elements determines how they are stacked (the composition order) when you playback or export your animation from each mode.

- In the Exposure Sheet, columns on the left are below columns on the right when you export a Drawing Mode scene.
- When you export a full movie or Sceneplanning Mode scene, elements in rows on top of the Timeline list appear layered on top of the elements below. Of course, when your elements change relative front/back position based on layout and pegged motion effects, that ultimately determines the composition order of the elements.



Any changes you make to your scene's contents in the Exposure Sheet appears in the Timeline window, except for layer order and element show/hide status.

There are eight element types you can add to your animation. Some elements do not appear in both modes:

- **Drawing** : vector drawing files you create or import.
Drawing elements appear in both the Exposure Sheet and the Timeline.
- **Image** : bitmap graphics that you import into your animation.
Image elements appear in both the Exposure Sheet and the Timeline.
- **Sound** : sound files you import into your animation.
Sound elements appear in both the Exposure Sheet and the Timeline.
- **Media** : multimedia files that you link into your animation.
You use the media element type to make a link from your animation to a multimedia file.
Media elements appear in both the Exposure Sheet and the Timeline.
- **Peg** : create motion, scaling, and rotation changes over time.
Peg elements appear only in the Timeline. You can modify peg elements in Sceneplanning Mode, but not in Drawing Mode.
- **Camera** : As in traditional animation and film production, you use cameras to “film” the action in a scene. You can use camera elements to zoom-in and zoom-out on your scene by changing the field-of-view (FOV), create pans, move closer or farther (truck in and out) from the action in your scene.

Toon Boom Studio™ can film a scene with only one camera. You can add additional cameras as a reference, but **Toon Boom Studio™** can only use the camera you select from the Camera drop-list on the Scene View toolbar to film your scene. You must create all of the camera effects you want to use for the final movie in one camera.

The default “scene camera” does not appear in the Timeline window, but any cameras you add will appear in the element list. You can modify camera elements in Sceneplanning Mode, but not in Drawing Mode.

- **Color Transform Effects** : change the color of element gradually from key frame to key frame.
- **Clipping Effects** : display only part of an image, using a mask to identify the areas on the image you want to “show through”. When you add this element, **Toon Boom Studio™** adds a Mask parameter element to control the masking image.


See Also

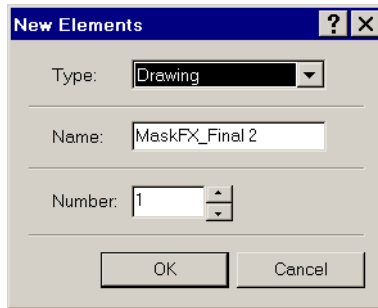
Adding Many Elements to a Scene on page 373
Changing Layering Order in the Exposure Sheet on page 375
Changing Layering Order in the Timeline on page 377
Renaming Elements on page 379
Deleting Elements on page 380
Cloning Elements on page 381
Showing/Hiding Elements on page 355
Changing the Default Colors of Elements on page 384

Adding Many Elements to a Scene

By default, there is one drawing element in new animation sets. When you want to add new content to your animation or add different types of content (such as bitmaps or sounds), you must add new elements.

To add elements to your scene, follow these steps:

1. Select **Element > New > Elements**. The **New Elements** dialog box opens.
 - You can also open this dialog box by clicking the **Contextual Menu**  button in the **Exposure Sheet** window and selecting **New > Elements**, or by clicking the **Add +** button in the **Timeline** window.



Use the New Elements dialog box to enter information about the elements you are adding.

2. Select the type of element from the **Type** drop-menu. You have the following choices.
 - **Drawing**: stores vector drawings you create in **Toon Boom Studio™**, import from Adobe® Illustrator®, or create by vectorizing bitmaps.
 - **Image**: contains static bitmap images you import in the element (usually a background image).
 - **Sound**: contains audio files you import to the scene.
 - **Media**: contains multimedia files you link to the scene.
 - **Peg**: allows you to change an element's position, size, or angle over time.
 - **Camera**: adds another perspective to a scene.
 - **Color Transform Effect**: allows you to change the colors in an element at key frames.
 - **Clipping Effect**: allows you to hide certain parts of a clip with a mask. When you select this option, **Toon Boom Studio™** adds a Mask parameter layer, which you use to control the mask parameter.

3. Type the name of the new element(s) in the **Name** field.
 - If you are adding one element, **Toon Boom Studio™** labels the column with the selected element name.
 - If you add more than one element, **Toon Boom Studio™** labels each with the selected element name followed by a sequential number (starting at one).
4. Type the number of elements you want to add in the **Number** field. You can also use the arrow buttons to increase or decrease the number.
5. Click **OK** when done.

Toon Boom Studio™ adds the selected number of columns to the Exposure Sheet window and the Timeline window with their default names, but you can rename them at any time.

See Also

Renaming Elements on page 379

Deleting Elements on page 380

Changing the Color of an Element on page 383

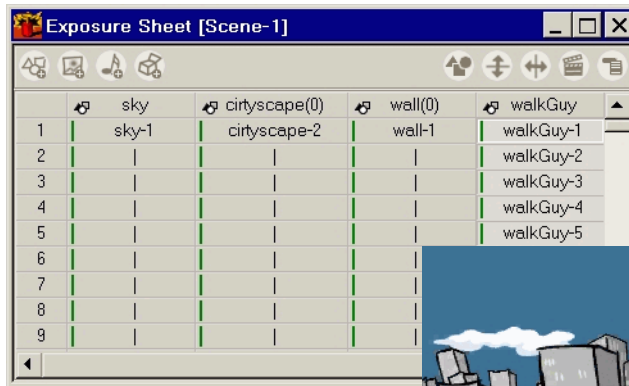
Changing Layering Order in the Exposure Sheet on page 375

Changing Layering Order in the Timeline on page 377

Changing Layering Order in the Exposure Sheet

The order of the elements in the Exposure Sheet window determines:

- Their layering order in the Drawing View window, which can be helpful when drawing related objects in a scene. The Exposure Sheet window sorts the layers from left (bottom layer) to right (top layer).
- Their layering order when rendering a Drawing Mode scene for export or playback.
- The initial layering order of elements in Sceneplanning Mode. However, once you switch to Sceneplanning Mode, the layering order of the Timeline and Exposure Sheet windows will be independent of each other.

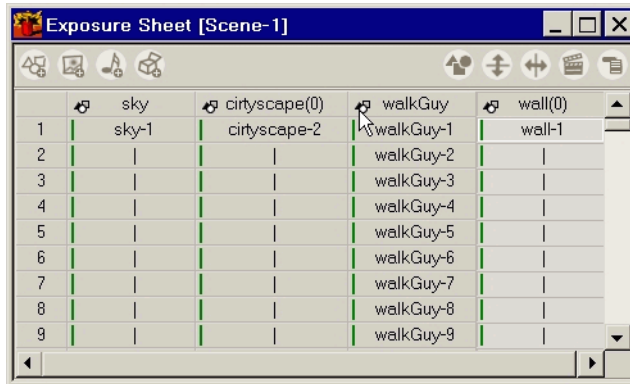


In this example, the walkGuy element is on top of the wall, the cityscape and the sky.

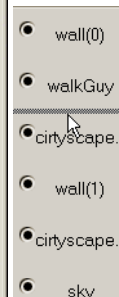


To change the layering order of elements in the **Exposure Sheet** window, do one of the following:

- Select the element in the **Exposure Sheet** and select one of the following commands from the **Element > Arrange** menu:
 - ⇒ **Bring to Front**: move the element on top of all elements.
 - ⇒ **Bring Forward**: move the element in front of the element currently on top of it.
 - ⇒ **Send to Back**: move the element behind all elements.
 - ⇒ **Send Backward**: move the element behind the element currently below it.
- Drag the element to its new layering position in the columns of the **Exposure Sheet** or in the **Element List** panel.
 - ⇒ In the **Exposure Sheet**, element columns to the left appear below element columns to the right.
 - ⇒ In the **Element List** panel, elements at the top of the list appear on top of elements on the bottom of the list.



A line appears between the existing elements to indicate where the element will appear.



See Also

Changing Layering Order in the Timeline on page 377
 Renaming Elements on page 379
 Deleting Elements on page 380
 Exporting to Flash on page 433

Changing Layering Order in the Timeline

When you first switch to Sceneplanning Mode, the initial layering order of elements is based on the order in which they were added to the Exposure Sheet window. After you switch modes, the layering order of the two modes are separate; **Toon Boom Studio™** does not update the Exposure Sheet when you make changes to the layering order in the Timeline window or vice-versa.

You can force elements to appear behind or in-front of other elements in your animation using the options of the Type list in the Drawing tab, Image tab, and Media tab.

- **Foreground:** Forces the element to appear in-front of other elements. When you have more than one element set to Foreground, the layering order in the Timeline determines the order of the Foreground elements.
- **Normal:** Allows the elements to follow the layering order of the Timeline order or the front/back position in the Offset field in the Properties window. If you select this option, then you must make sure that your foreground and background images are in the right layering order in the Timeline list.
- **Background:** Forces the element to appear behind other elements. When you have more than one element set to Background, then the layering order in the Timeline determines the order of the Background elements.

We made the clouds a background element so that no matter how characters or camera move in the scene, the clouds will always appear in the back.



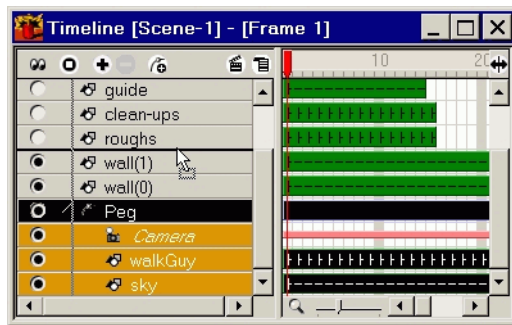
You can also use the Timeline window to change the layering order of elements. The top layers are composited on top of the lower layers.

To change the composition order of elements in the Timeline window, use one of the following methods:

- Select one of the following commands from the **Element > Arrange** menu:
 - ⇒ **Bring to Front**: move the element on top of all elements.
 - ⇒ **Bring Forward**: move the element in front of the element currently on top of it.
 - ⇒ **Send to Back**: move the element behind all elements.
 - ⇒ **Send Backward**: move the element behind the element currently below it.

If the element is a child attached to a parent element, such as a peg or an effect, these commands change the element's layering order within the group of child elements attached to the parent. They will not detach the element from its parent to change its layering order.

- Drag the element to its new layering position in the **Timeline** window.
 - ⇒ In the **Timeline** list, click the name of the element you want to move.
 - ⇒ Drag the element to its new position in the layering order. Your pointer changes to indicate if the element can be placed in the position you have selected.



See Also

Creating Motion Paths with Pegs on page 267

Adding Pegs and Attaching Elements to Pegs on page 261

Renaming Elements

At any time, you can rename elements to more accurately reflect the contents they hold. The new element name appears in both Drawing and Sceneplanning Modes.

If you change the name of a drawing or image element, **Toon Boom Studio™** changes the names of all drawings and images in the element and in your animation set folder.

To rename an element, follow these steps:

1. Select the element you want to rename.
2. Select **Element > Rename Element**. The **Rename Element** dialog box opens.

The name of the dialog box actually changes depending on the type of element you are modifying. For example, if you select an Image element, the dialog box opens as **Rename Image Element**.

3. Type the name for the element in the **Element Name** field and click **OK**.

Toon Boom Studio™ renames the selected element and if the element contains drawings or images, their names change to reflect the new element name.

See Also

Exposure Sheet and Timeline Windows on page 354

Layering Elements on page 371

Sequencing Element Contents on page 386

Naming and Renaming a Cell on page 393

Renaming a Drawing or Image on page 393

Deleting Elements

As you develop your animation, you may need to delete unnecessary elements.

For example, when you complete your final drawings of a character, you can delete the elements that contained the roughs.

To delete an element from your animation, follow these steps:

1. Select the element you want to remove.
2. Select **Element > Delete Element**. **Toon Boom Studio™** removes the element and its contents from your animation and from your animation set folder.

If you want to only hide an element in a scene, you do not need to delete it from the scene completely! You can temporarily toggle it on and off, which not only hides it from the **Drawing View/Camera View** window, but also from the rendering process too!

See Also

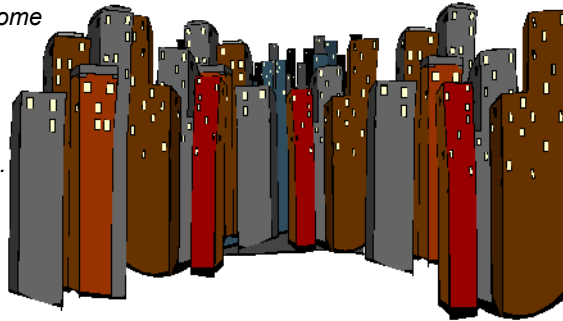
Showing/Hiding Elements on page 355

Cloning Elements

You can clone elements when you want to reuse the contents of an element. When you clone elements, **Toon Boom Studio™** refers to the same content file in the animation set folder. Cloning elements can help you keep your Macromedia® Flash™ movie small in file size.

Let's say you want to create the skyline of a city. Rather than drawing hundreds of buildings, you could draw a few, and then reposition them in space and flip them, to create a dense scene from few drawings.

In this example, we cloned some buildings three times, then positioned them throughout the 3D space to create a deep city scene with a minimal amount of drawings.



You can clone the following element types:

- Drawings
- Images
- Media
- Sounds
- Pegs
- Color Transform Effects

The contents of the cloned elements are shared, but you can change some of the properties of the clones without affecting the other clones.

- Drawing and Image Elements: the original and the cloned element both reference the same files. Cloning drawing and image elements does not increase the file size of your final animation.
 - ⇒ If you change a drawing or image, all clones are updated with the new drawing or image.

- ⇒ If you add new drawings or images to the clones, they do not appear in the other clones. However, they are available to the other clones by renaming a cell with the name of the drawing or image.
- ⇒ You can change the exposure of drawings and images without affecting the clones.
- Media: cloned media share the same content. You can reposition and change the start frame of media elements without modifying other clones.
- Pegs: the cloned pegs share control points and key frames, and you can change the position of the peg in the 3D Sceneplanning space without affecting the clones. Cloning peg elements does not increase the file size of your final animation.
- Sounds: cloned sounds are exact copies. You can change any property in the sound clones without affecting other clones. Cloning sound elements does not increase the file size of your final animation.
- Color Transform Effects: clones are exact copies of the original, with the same key frame and values. Changes to the key frame values in any clone changes all other clones. You can change the start time of any clone without changing the others.

To clone an element, follow these steps:

1. Select the element you want to clone. You can only select one element at a time.
2. Select **Element > Clone**.

A copy of the selected element appears in the **Exposure Sheet** window and in the **Timeline** window.

See Also

Adding Many Elements to a Scene on page 373

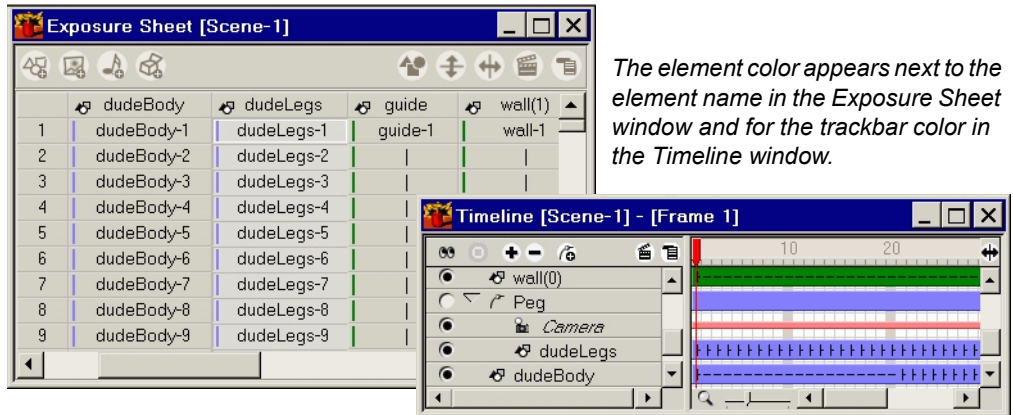
Renaming Elements on page 379

Deleting Elements on page 380

Changing the Color of an Element

As you add elements to the Exposure Sheet window and Timeline window, **Toon Boom Studio™** assigns a default color to each element based on its type. You can change the color of specific elements to help you group and identify elements.

For example, if you drew a character on several layers, say the body in one layer, the head in another and the legs in another, you could give all of these layers a color different from the defaults to help you identify them easier in the Exposure Sheet window and Timeline.



To customize the color of an element, follow these steps:

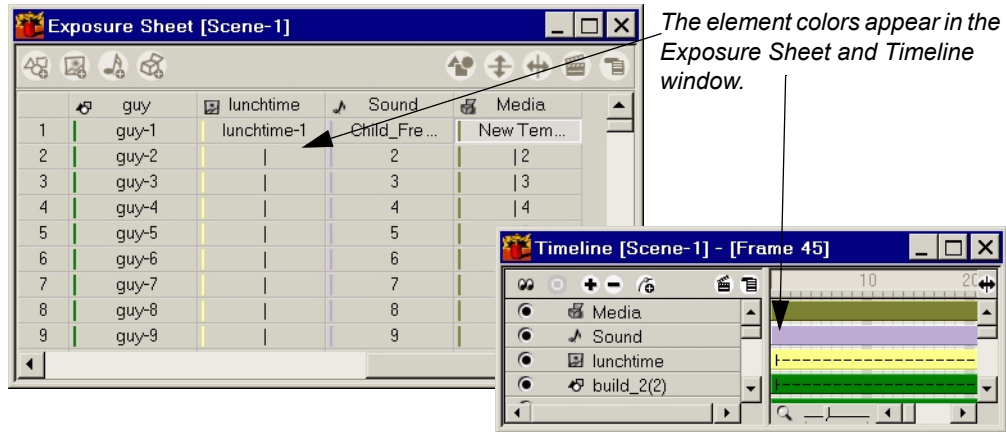
1. Select the element.
2. Select **Element > Display > Color**. The **Color** dialog box opens.
3. Select the color you want to use for the selected element and click **OK**. The selected column now appears in the new color.
4. To reset the element colors to their default settings, select **Element > Display > Default Color**.

See Also

Changing the Default Colors of Elements on page 384
 Changing the Track Color in the Timeline on page 370

Changing the Default Colors of Elements

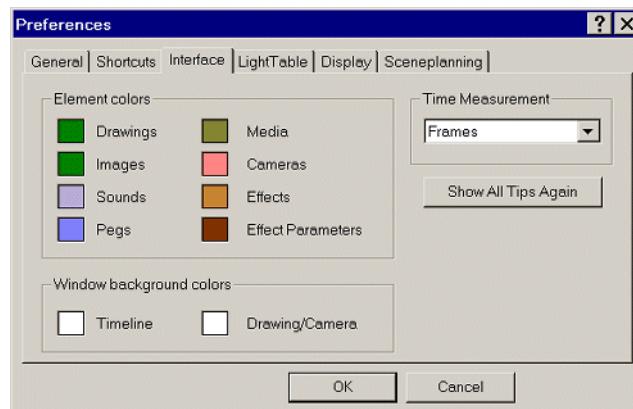
Toon Boom Studio™ uses color to help you distinguish each element type in the Exposure Sheet window and Timeline window.



You can change these default colors using the Preferences dialog box, which applies the changes in your current **Toon Boom Studio™** session and any other animation set you create from then onwards.

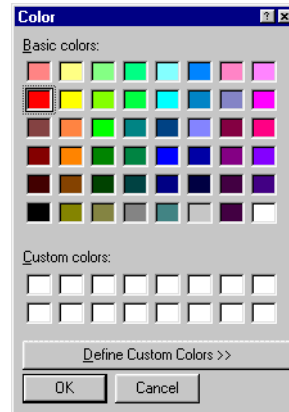
To change the default color assigned to elements, follow these steps:

1. Select **Edit > Preferences**. The **Preference** dialog box opens.
2. Click the **Interface** tab.



3. Double-click the swatch next to the feature you want to change. The **Color** dialog box opens

Use the Color dialog box to select element type colors.



4. Select the color you wish to use and click **OK**. Your selected color appears next to the feature you selected. If the color you want to assign does not appear here, you can click the **Define Custom Colors** button to select from a wider range of colors.
5. When you define all of the default colors, click **OK** in the **Preferences** dialog box.

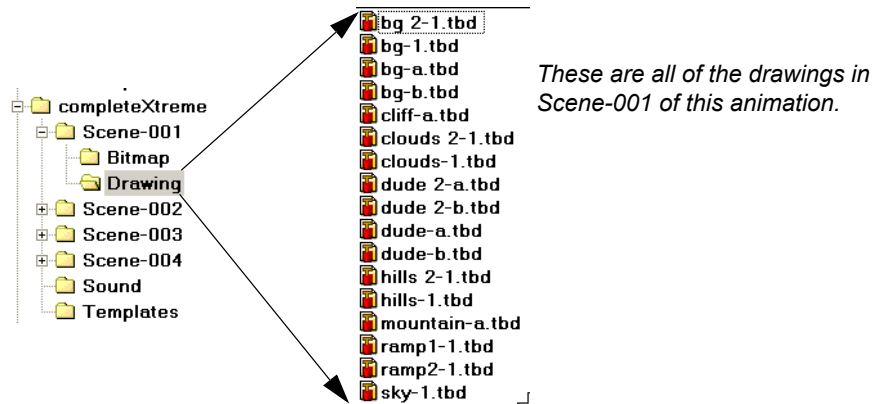
See Also

Changing the Color of an Element on page 383
 Assigning Keyboard Shortcuts on page 48
 Real-Time Playback on page 431
 Selecting the Units of Measure on page 50

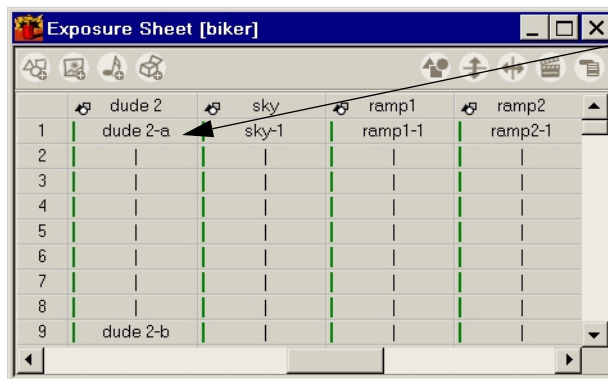
Sequencing Element Contents

Your animation set folder contains all of the contents of your animation.

- Each scene has its own folder in the root of the animation set folder.
- Also at the root of the animation set folder are the sound and template folders, which provide storage for the entire animation set.
- In each scene folder are bitmap and drawing folders, which store every static and vector image in the scene. The names of drawing and image files are based on the name of the element and their order of creation.

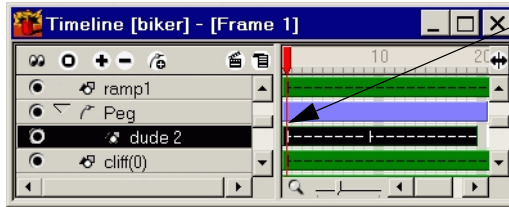


In Drawing Mode, cell labels in the Exposure Sheet let you know what will appear at each frame.



The cell label displays the element name plus the cell name, which tells **Toon Boom Studio™** what drawing to display from the animation set folder.

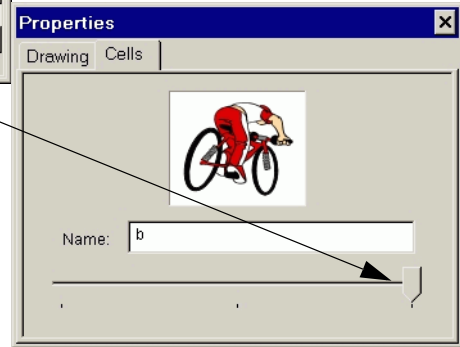
In Sceneplanning Mode, the Timeline window and the Cells tab let you know what image or drawing is displayed at each frame



In the Timeline window, the vertical bar indicates every frame where there is a new drawing or image.

The Timeline doesn't let you know exactly which drawing or image is in use, but you can use the Cells tab to figure out the exact name of the drawing or image and use.

You can even use the slider to see all of the drawings and images in an element, and change the one that is displayed at the current frame.



To sequence the contents of your animation:

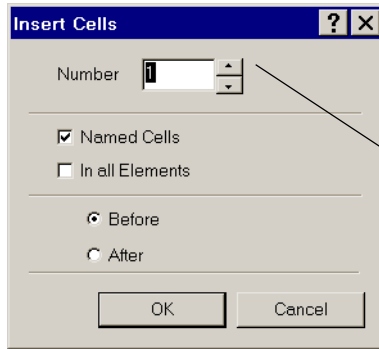
- In Drawing Mode, create or import new content and use the Exposure Sheet to manage and name your elements.
When you want to change the drawing or image that appears at a frame, you change the cell label so that a new one is displayed from the animation set folder.
- In Sceneplanning Mode, you can 't create new content. But you can select different drawings and images to display at each cell.

See Also

Inserting a Range of Numbered Cells on page 388
 Inserting Blank Cells in an Element on page 390
 Naming and Renaming a Cell on page 393
 Cutting, Copying and Pasting Cells on page 394
 Clearing a Drawing from a Cell on page 399
 Protecting Drawings on page 398
 Inserting Blank Frames in a Scene on page 391
 Deleting Cells from Elements on page 399

Inserting a Range of Numbered Cells

If you want to preplan the number of frames an animation sequence should take, you can label a range of cells before you start drawing. For example, if you want to create a walk cycle in 10 frames, you can label those 10 frames first and then add the drawings to them later.



Inserting named cells labels the cells in the selected element with numbers that increase from the last cell.

	Drawing
1	Drawing-1
2	Drawing-2
3	Drawing-3
4	Drawing-4
5	Drawing-5
6	Drawing-6
7	Drawing-7
8	Drawing-8
9	Drawing-9
10	Drawing-10

You can add numbered cells to the selected element in the Exposure Sheet window or Timeline window. However, you can only insert named cells in the Exposure Sheet window.

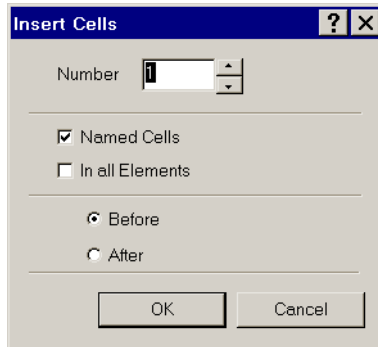


You can only add a range of named cells to drawing elements, because you'll be using **Toon Boom Studio™** to create the drawings for that element.

Because the other elements like Sound and Media rely on files you create outside of **Toon Boom Studio™**, the system automatically assigns the cell name when you import them.

To insert a range of numbered cells, follow these steps:

1. Select the cell where you want to start the range of numbered cells
2. Select **Element > Cell > Insert Cell**. The **Insert Cells** dialog box opens.



3. Type the number of cells you want to insert in the **Number** field. You can also use the arrow buttons or the arrow keys to increase or decrease this value.
4. Select **Named Cells** checkbox to automatically number the cells in this element. **Toon Boom Studio™** reads the last numbered cell for this element and starts the new range with the next number.
5. Select where you insert these new cells by selecting one of the following radio buttons:
 - **Before**: inserts the cells before the row you selected.
 - **After**: inserts the cells after the row you selected.
6. Click **OK** to add the cell(s) to your Exposure Sheet window.



There is an even quicker way to add numbered cells to your Exposure Sheet window.

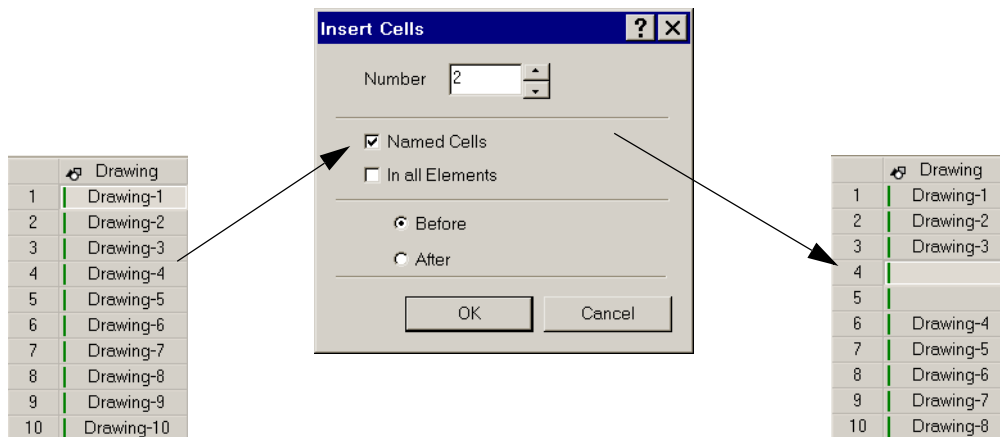
1. Select a range of cells by pressing [Shift] and clicking another cell.
2. Right-click on the selected cells and select **Insert Cell** from the pop-up menu. **Toon Boom Studio™** automatically adds numbered cells in the range you select.

See Also

Naming and Renaming a Cell on page 393
 Creating Cycles on page 395
 Inserting Blank Frames in a Scene on page 391

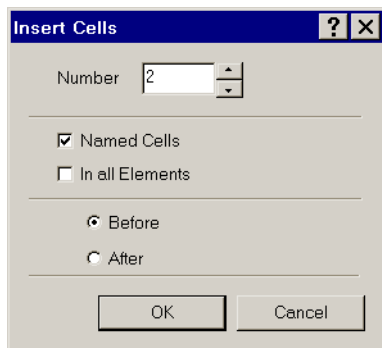
Inserting Blank Cells in an Element

You can insert blank cells between cells with content. For these blank cells, nothing from the element will appear in the frame.



To insert a range of blank cells in an element, follow these steps:

1. Right-click the cell where you want to start the range of blank cells and select **Insert** from the pop-up menu. The **Insert Cells** dialog box opens.



2. Type the number of cells you want to insert in the **Number** field. You can also use the arrow buttons or the arrow keys to increase or decrease this value.
3. Make sure you deselect the **Named Cells** checkbox so that the cells appear blank.

- 4. Select where you insert these new cells by selecting one of the following radio buttons:
 - **Before:** inserts the cells before the row you selected.
 - **After:** inserts the cells after the row you selected.
- 5. Click **OK** to add the cell(s) to your Exposure Sheet window.

See Also

Naming and Renaming a Cell on page 393
Creating Cycles on page 395
Inserting Blank Frames in a Scene on page 391

Inserting Blank Frames in a Scene

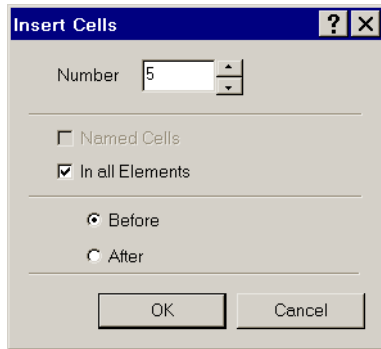
When you need to add time to an entire scene (across all of the elements), you can add frames to the Exposure Sheet window or Timeline window. This is useful if you need to add time to the middle of a scene. For example, if you want to have a complete stop to all visual and audio content for 5 frames.

We added five frames to all elements. You can see what happened by comparing the before/after shots of the Exposure Sheet and Timeline.

	clouds 2(0)	hills 2	mountainf...	Child.wav
1	clouds 2-1	hills 2-1	mountainf...	Child.wav
2			2	2
3			3	3
4			4	4
5			5	5
6			6	6
7			7	7
8			8	8
9			9	9
10				
11				
12				
13				
14				
15	clouds 2-1	hills 2-1	mountainf...	Child.wav

To insert blank frames in a scene, follow these steps:

1. Select the frame where you want to insert the new frames.
 - In the **Exposure Sheet** window, click a cell or a frame.
 - In the **Timeline** window, use the red frame slider to advance to the frame number.
2. Select **Element > Cell > Insert Cell** from the pop-up menu. The **Insert cells** dialog box opens.



3. Type the number of frames you want to insert in the **Number** field.

You can also use the arrow buttons or the arrow keys to increase or decrease this value.
4. Select **In all Elements** checkbox to add frames to the entire scene at the frame number.
5. Select where you insert these new frames by selecting one of the following radio buttons:
 - **Before**: inserts the frames before the row you selected.
 - **After**: inserts the frames after the row you selected.
6. Click **OK** to add the frame(s).

See Also

Inserting Blank Cells in an Element on page 390
Naming and Renaming a Cell on page 393
Creating Cycles on page 395

Naming and Renaming a Cell

You can change the name of a cell to either:

- Create a new drawing file in the animation set folder
- Load a different drawing from the animation set folder.

For example, if there is already a drawing called dude-02 and you type 02 in the dude element, the dude-02 drawing appears in the frame you selected.

To name or rename a drawing manually, follow these steps:

1. Double-click the cell that you want to modify. The cell becomes editable.
2. Type the name you want to assign to that cell and press [Enter]. The next cell in the element becomes editable.
3. Press [Esc] to quit the edit mode.

See Also

Layering Elements on page 371

Clearing a Drawing from a Cell on page 399

Renaming a Drawing or Image

If you want to give an existing drawing or image file a new name, you need to use the Rename command.

To rename a drawing or image, follow these steps:

1. Right-click the drawing or image you want to rename and select **Rename Drawing/Image** from the pop-up menu. The **Rename Drawing/Image** dialog box opens.
2. Type the new name in the **Drawing/Image Name** field and click **OK**. If the name you type already exists, you must select a new name.

See Also

Renaming Elements on page 379

Naming and Renaming a Cell on page 393

Cutting, Copying and Pasting Cells

As you build content, you will want to reuse as much as possible to reduce your work, and hopefully reduce the file size of your animation.

- If you cut or copy and paste a cell in the same element, **Toon Boom Studio™** will paste the original cell label, accessing the original drawing or image in the animation set folder.
To reduce your work and keep the file size of your final Macromedia® Flash™ movie small, you can reuse the same drawing at different frames.
- If you paste a new object, **Toon Boom Studio™** copies the contents of the original cell to the new cell and creates a new file in your animation set folder. You can use the paste new object feature to use the contents of one cell for the basis of another drawing.

To cut, copy and paste cells, follow these steps:

1. Select the cell(s) you want to copy from the element column in the Exposure Sheet window.
2. Select **Edit > Cut** or **Edit > Copy**.
 - Select **Copy** to leave a copy of the cell at its original frame.
 - Select **Cut** to delete the cell.
3. Select where you want to paste the cells.
 - If you want to reuse the same drawing and keep the file size small, you must select a cell in the same element.
 - If you want to create a new drawing, you can select a cell in the same or a different element.
 - In the Timeline window, you must change the current frame (with the red frame slider) to select the cell in the element where you want to insert the pasted object.
4. Select **Edit > Paste** or **Edit > Paste New Object**.
 - Select **Paste**.
 - ⇒ If you selected a cell in the same element, **Toon Boom Studio™** accesses the original file. When you modify a file, all cells that access the file are updated.

- ⇒ If you selected a cell in a different element, **Toon Boom Studio™** creates a new file in your animation set folder. You can modify either file without affecting the other.
- Select **Paste New Object** if you want to create a new cell in the same element with the contents of the original cell.

See Also

Sequencing Element Contents on page 386

Creating Cycles on page 395

Creating Cycles

Animation cycles are a key technique in the reuse of work and file size management.

The **Create Cycles** command simplifies the process of labelling cells in the exposure sheet to create cycles.

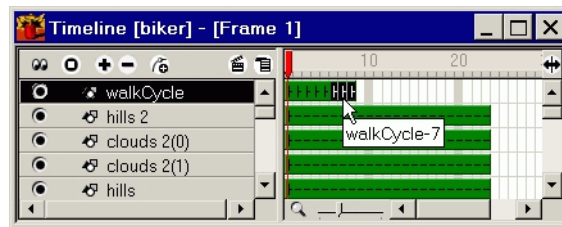
You can create animation cycles in the Exposure Sheet window or in the Timeline window.

To create cycles from a section of cells, follow these steps:

1. Select the cells that contain the drawings in the cycle.
 - In the **Exposure Sheet** window, press [Shift] and select the range of cells.
 - In the **Timeline** window, press [Alt] and select the range of cells.

	walkCycle
1	walkCycle-1
2	walkCycle-2
3	walkCycle-3
4	walkCycle-4
5	walkCycle-5
6	walkCycle-6
7	walkCycle-7
8	walkCycle-8
9	
10	
11	
12	
13	
14	
15	
16	

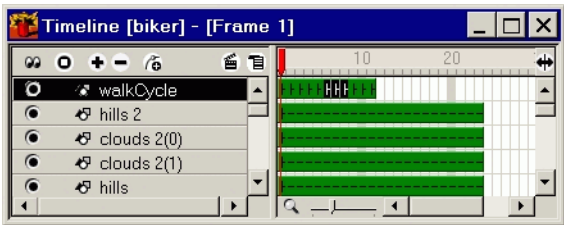
Select the cells that you want to use in the cycle.



- 2. Right-click the selected cells and select **Create Cycle**. The **Create Cycle** dialog box opens.
- 3. In **Number of Cycle** field, type the number of cycles you want to create, including the cycle you have selected.

	walkCycle
1	walkCycle-1
2	walkCycle-2
3	walkCycle-3
4	walkCycle-4
5	walkCycle-5
6	walkCycle-6
7	walkCycle-7
8	walkCycle-8
9	walkCycle-1
10	walkCycle-2
11	walkCycle-3
12	walkCycle-4
13	walkCycle-5
14	walkCycle-6
15	walkCycle-7
16	walkCycle-8

The cycle is added after the selected cells.



See Also

- Cutting, Copying and Pasting Cells on page 394
- Timing/Exposing Drawings and Images on page 401
- Exposure Sheet and Timeline Windows on page 354
- Creating Advanced Cycles on page 397

Creating Advanced Cycles

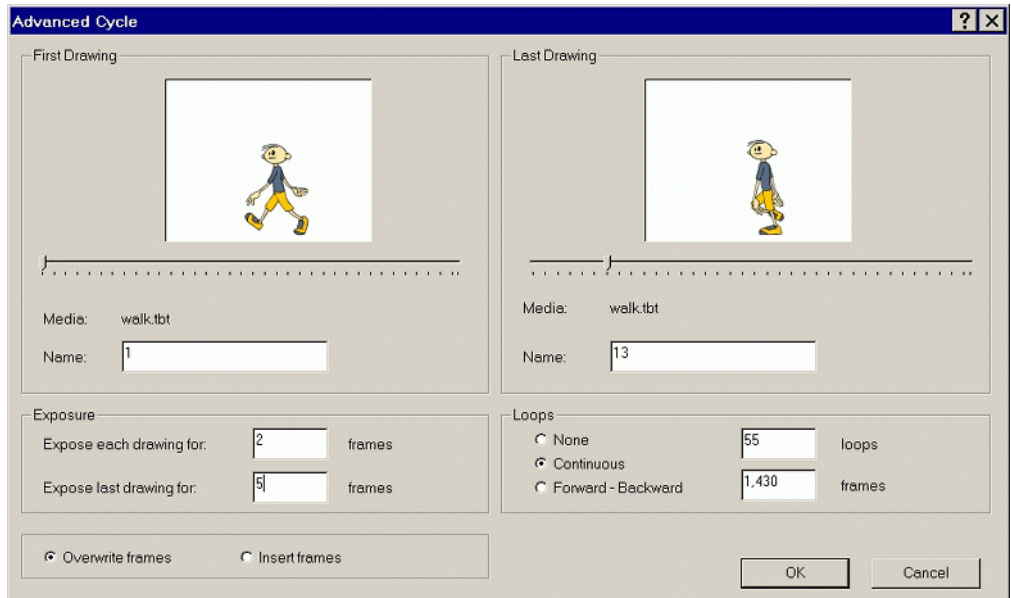
During animation development, you design more complicated cycles.

For example, a bouncing ball cycle where the sequence of drawings goes backwards and forwards during the cycle (1-2-3-4-3-2-1).

You can use the Advanced Create Cycle dialog box to automate the process of creating cycles and labelling cells.

To create advanced cycles, follow these steps:

1. Right-click a cell in the element where you want to create the cycle and select **Advanced Create Cycle** from the pop-up menu. The **Advance Create Cycle** dialog box opens.



2. In the **First Drawing** and **Last Drawing** panels, select the drawings that you want in the first and last position of the cycle. You can type values in the **Name** fields or use the slider to select the drawings.
3. In the **Exposure** panel, set the exposure time for the drawings in the cycle. You can set a different exposure for the last drawing in the cycle to stay on-screen.
4. In the **Loops** panel, select the number of times you want the cycle to repeat.

- Select **None** if you don't want the cycle to repeat.
 - Select **Continuous** if you want the cycle to restart with the first drawing on each loop.
For example, if you created 2 continuous loop of drawings 1-2-3, the resulting loop would be: 1-2-3-1-2-3.
 - Select **Forward-Backward**, if you want to restart the loop with the previous drawing.
For example, if you created 2 forward-backward loops with drawings 1-2-3, the resulting loop would be: 1-2-3-2-1-2-3-2.
 - Type the number of times you want the cycle repeat in the **Loops** field. If you want to repeat the cycle for a specific number of frames, type a value in the **Frames** field.
5. Select how you want to insert the cycle.
 - Select **Insert Frames** to add the cycle in the current location.
 - Select **Overwrite Frames** to delete frames that overlap the cycle.
 6. Click **OK** when you are done. **Toon Boom Studio™** updates the **Exposure Sheet** window with the new cell labels.

See Also

Cutting, Copying and Pasting Cells on page 394
Timing/Exposing Drawings and Images on page 401
Exposure Sheet and Timeline Windows on page 354
Creating Cycles on page 395

Protecting Drawings

In Drawing Mode, you can lock drawings so that they can't be modified accidentally.

If you lock selected drawings in an element, you can auto paint all the other drawings without modifying the locked ones.

You can only lock drawings from the Exposure Sheet window.

To protect drawings, follow these steps:

1. Select the drawing(s) you want to lock.
2. Right-click the selected drawing(s) and select **Lock Drawing** from the pop-up menu.

A lock  appears on the selected drawings wherever in use.

3. To unlock the drawing, right-click it and select **Unlock Drawing** from the pop-up menu.

See Also

Exposure Sheet and Timeline Windows on page 354

Drawing Line Art on page 114

Clearing a Drawing from a Cell

In Drawing Mode, you can clear drawings that you don't want to use anymore from a cell. This action keeps the drawing file, but deletes all of the contents of the drawing.

You must use the Exposure Sheet window to clear drawings from a cell.

To clear drawings from selected cells, follow these steps:

1. Select the cell(s) that contain drawings you want to erase.

If you are selecting more than one cell, you should check each cell to make sure it contains a drawing you don't want anymore. If you select a range of cells, only the first cell appears in the **Drawing View** window.

2. Right-click the selected cell(s) and select **Clear** from the pop-up menu. **Toon Boom Studio™** deletes the contents of the drawing and leaves the cell with the same name.

See Also

Deleting Cells from Elements on page 399

Protecting Drawings on page 398

Deleting Cells from Elements

You can delete cells when you want to remove it from the playback.

- When you delete cells from drawing and image elements, the original files remain in your animation set folder.
- When you delete cells from sound or media elements, the deleted frames are not played in the rendered animation, though the original file is unchanged. For complete control over your sounds, you should edit them with the Sound Element Editor.

Although you can only delete cells from the Exposure Sheet in Drawing Mode, it affects the scene in both Drawing and Sceneplanning Modes.

To delete cells from selected element(s), follow these steps:

1. Select the cells from the element(s) you want to affect.
2. Right-click your selection and select **Delete Cell** from the pop-up menu.

See Also

Editing Sounds on page 222

Editing Templates on page 412

The Library Window on page 404

Timing/Exposing Drawings and Images

The amount of time a single frame appears on screen depends on the animation's frame rate. If the frame rate is 12 frames-per-second (fps), then each frame appears for 1/12th of a second.

You can change the exposure of a drawing, image or media to increase or decrease the amount of time it spends on screen. For example, you can extend the exposure of a drawing from 1 to 3, the drawing will appear on screen for 3 times as long.

You can change the exposure of a drawing, image or media from either Drawing Mode or Sceneplanning Mode.

To change the exposure of a drawing or image, follow these steps:

- 1.** Select the cell of the drawing, image or media element.
 - In the Exposure Sheet window, click the cell.
 - In the Timeline window, use the red frame slider to select the cell.
- 2.** Select one of the following commands from the **Element > Cell** menu.
 - **Set Exposure to 1:** appears in one frame (the default setting)
 - **Set Exposure to 2:** appears in two frames.
 - **Set Exposure to 3:** appears in three frames.
 - **Set Exposure:** to set another exposure time. This command opens the **Set Exposure** dialog box.
 - **Add Exposure:** adds one to the drawing, image or media's current exposure time.
 - **Remove Exposure:** removes one exposure from the drawing or images current exposure time.
 - **Extend Exposure:** adds a selected number of frames to the current exposure time. This command opens the **Extend Exposure** dialog box. This option is not available when you select multiple cells.



Here's a shortcut for extending the exposure in the Exposure Sheet window.

1. Selecting the cell and then selecting a range of cells, the last one of which is where you want to extend the exposure time to.
2. Right-click the range of cells and select **Extend Exposure** from the pop-up menu.

See Also

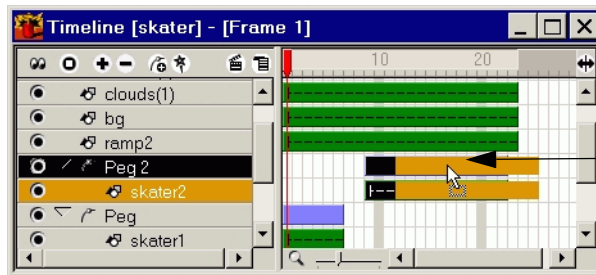
Changing an Element's Start Time in the Timeline on page 402

Changing the Start Time and Duration of a Peg on page 262

Changing an Element's Start Time in the Timeline

Because the **Timeline** window displays the scene's elements horizontally, you can easily see when elements start and stop.

The **Timeline** window also makes it easy to change an element's timing in a scene. You can change when an element starts or stops in the **Timeline** window simply by dragging it from one position to another.



Drag the element's trackbar to a new position to change its start/end time.

You can select and drag multiple elements at the same time.

See Also

Timing/Exposing Drawings and Images on page 401

Changing the Start Time and Duration of a Peg on page 262

Changing the Start Frame and Duration of a Dynamic Camera on page 332

Chapter 12

Re-using Content

This chapter explains how to re-use content and make the most of your work.

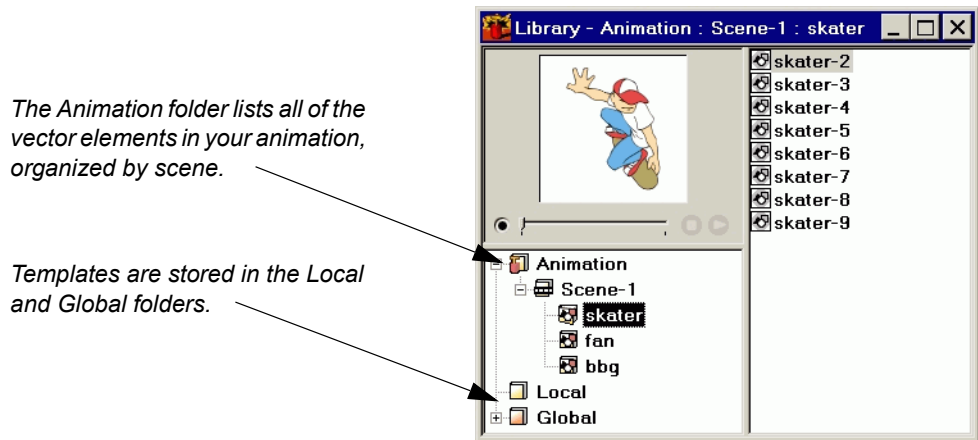
This chapter contains the following topics:

- The Library Window on page 404
- Re-using Drawings and Images in the Current Animation on page 409
- Creating Templates on page 410
- Using Templates on page 417
- Organizing Templates in Catalogs on page 423
- Defining the Template Author and Copyright on page 426

The Library Window

The Library window is your center for managing re-usable content in **Toon Boom Studio™**. From the Library window, you can access:

- All vector elements and drawings, and image elements and bitmaps in your animation.
From the list of vector elements, you can copy any drawing from one place in your animation set to another.
- All global and local templates.
Templates are files that you can use to store individual pieces of animation content, such as drawings, images, or sounds, or collections of animation content (many drawings, images or sounds) or elements.



When you need to re-use any piece of animation content in your current animation, or in any project you are working on, you can use templates.

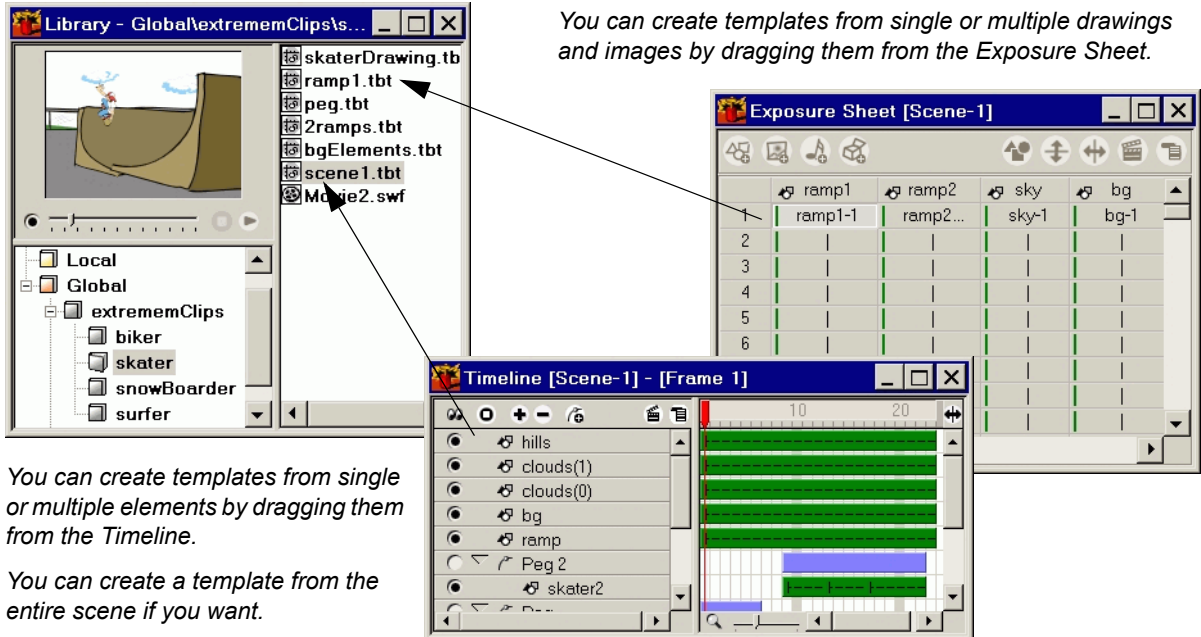
You can even use templates to share work with other artists on a project. Create templates from completed work and then send the template files to the rest of the people on your team. Those responsible for compositing can import the templates into the Library and then build the finished work.

Templates can reduce the amount of work you need to do, as well as keep the file size of your animation small.

You can create templates from:

- Drawings, images and sound in Drawing Mode.
- Entire elements in Sceneplanning Mode. Templates you create from Sceneplanning Mode store the layout order and peg effects you design.

You can also import media files (sound files and SWF movies) into the Library so that you can manage them as re-usable templates.



You cannot create templates from Media elements or their contents.

See Also

Local and Global Template Storage on page 406
 Previewing Content in the Library on page 408
 Editing Templates on page 412
 Importing Multimedia Files into the Library on page 413
 Copying a Template into Your Animation on page 419
 Linking Templates to Media Elements on page 420
 Re-using Drawings and Images in the Current Animation on page 409

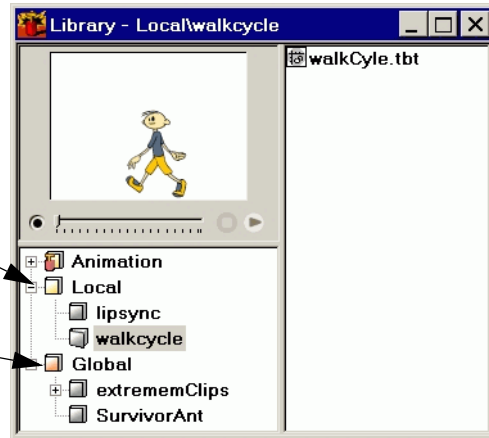
Local and Global Template Storage

You can store your templates globally or locally.

- **Local:** templates are available to all scenes in the current animation set. You can find these template files in the Template folder of your animation set.
- **Global:** these templates are available to all animation sets you create on your system. **Toon Boom Studio™** stores all global templates in a folder that is accessible in all animation sets.

The templates you have in your current animation set appear in the Local folder.

The templates that you can use in any animation set appear in the Global folder.



See Also

Configuring the Global Library Storage Path on page 407
Organizing Templates in Catalogs on page 423
Creating Templates on page 410
Using Templates on page 417

Configuring the Global Library Storage Path

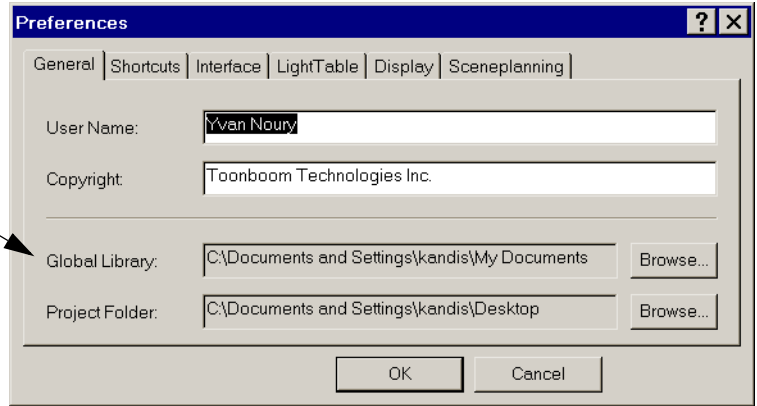
Toon Boom Studio™ stores the global templates in a directory that all animation sets can access.

By default, **Toon Boom Studio™** stores the global templates in your My Documents folder, but you can select another folder for these global templates.

To change the default path for global templates, follow these steps:

1. Select **Edit > Preferences**. The **Preferences** dialog box opens.
2. Select the **General** tab.

The Global Library field identifies the location of your Global template folder.



3. Click the browse button next to the **Global Library** field and select the path where you want to store your template files.
4. Click **OK** when done.

See Also

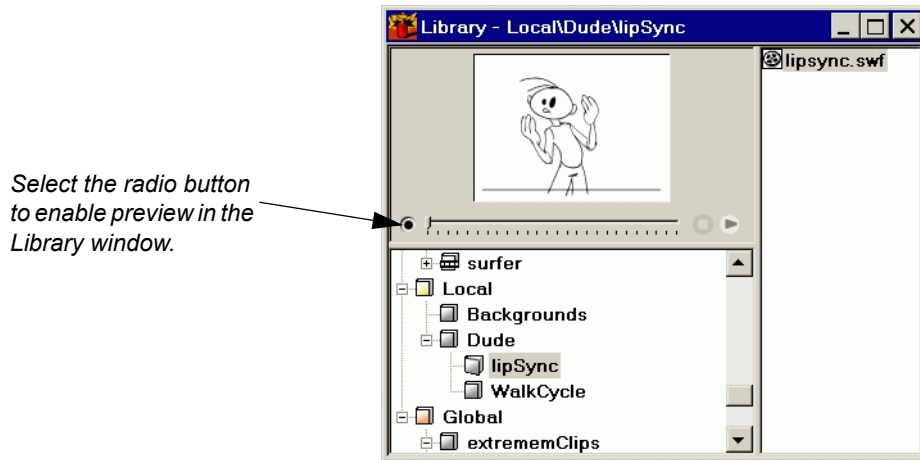
Defining the Template Author and Copyright on page 426

Creating Templates on page 410

Using Templates on page 417

Previewing Content in the Library

You can check the contents in the Library using the preview area in the window.



To preview content in the library, follow these steps:

1. Make sure the preview radio button is enabled.
2. Double-click the object you want to preview.
 - In the Animation folder, you can preview entire scenes or elements, or individual drawings.
 - In the Global and Local folders, you can preview any type of template. However, if your template consists of a peg or a camera element only, you may not see anything in the preview window.
3. Click the **Play** ► button in the preview panel. If there are multiple frames in the object you want to playback, you can use the slider to select the frame you want to see.

See Also

The Library Window on page 404

Re-using Drawings and Images in the Current Animation on page 409

Creating Templates on page 410

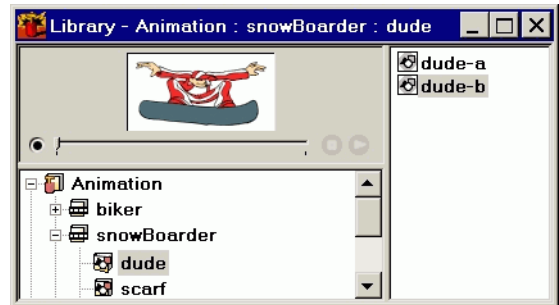
Using Templates on page 417

Re-using Drawings and Images in the Current Animation

You can re-use vector drawings and bitmap images in the current animation by copying them to new elements, in the same or different scenes.

The AnimationSet folder lists all of the vector elements and drawings in your animation, organized by scene.

When you select an element, the contents appear in the right side of the Library window.



To re-use drawings and images in the current animation, follow these steps:

1. In the Animation folder, select the scene and element that contains the drawings you want to copy.
2. Decide what you want to copy.
 - To copy all of the drawings in the element to the new location, drag the element from the **Library** window to the Exposure Sheet or Timeline.
 - To copy only those drawings you need, drag selected drawings from the right column of the **Library** window to a new or existing element. You can also select the frame where you want to copy the selected content, right-click the drawing or image, and select **Copy to Current Frame** from the pop-up menu.

Toon Boom Studio™ copies the drawings you select to the new location. The drawing you copy will have a new name. You can edit the vector drawings you copy in their new location.

See Also

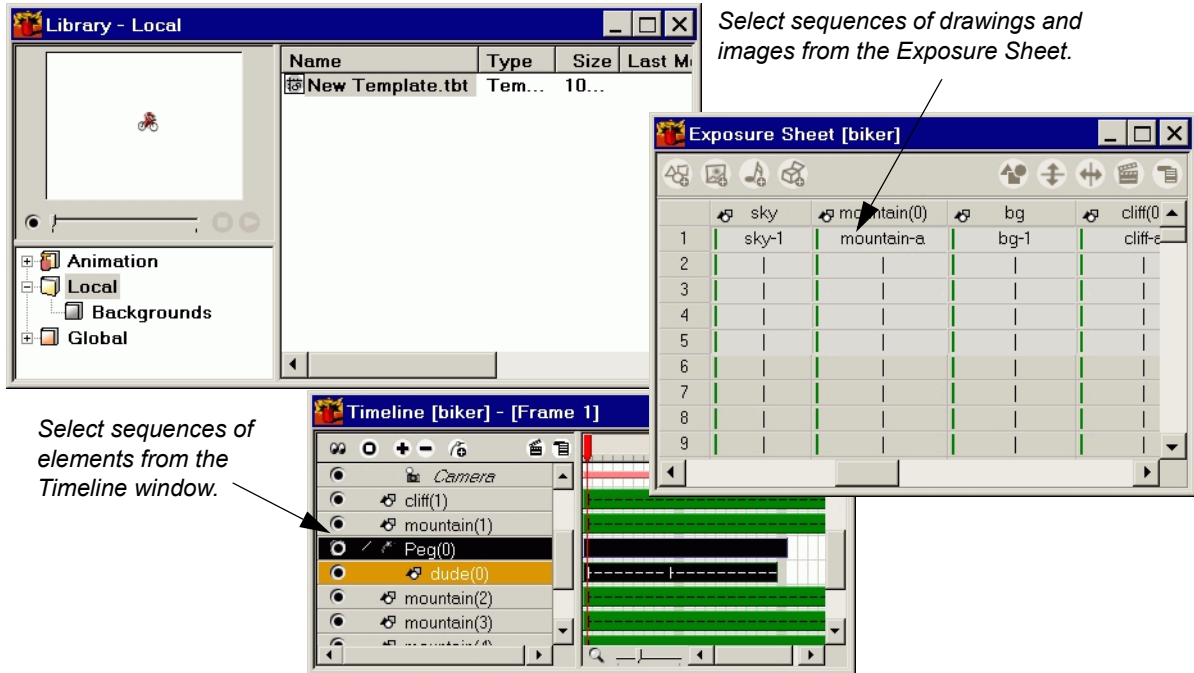
The Library Window on page 404
 Creating Templates on page 410
 Using Templates on page 417

Creating Templates

Creating a template is as easy as selecting what you want from the Exposure Sheet or Timeline window and dragging your selection into the Library window!

You can create templates from any piece of animation content:

- Create templates from single or multiple images and drawings, or sounds, in the Exposure Sheet window.
- Create templates from single or multiple elements from the Timeline window.



When you drag your selection in the Library window, **Toon Boom Studio™** analyzes the content and assigns an icon to the template based on what it contains.

To create templates, follow these steps:

1. Select **Windows > Library** to display the **Library** window.
2. Select the item(s) you want to use to create a template from either the Exposure Sheet (**Drawing Mode**) or the Timeline window (**Sceneplanning Mode**).

Depending on the mode you are in, you can select the same items one of the following ways:

- If you are in **Drawing Mode**, you can select a range of cells from any part of the Exposure Sheet (you cannot select one or more columns).
To select a range of cells, click the first cell and drag-select the adjoining cells (either from the same column or the adjacent columns). You can also press [Shift]+click to select a range of cells.
 - If you are in **Sceneplanning Mode**, you can select a range of adjacent items (cells or elements, pegs, cameras) from the Timeline window, as well.
 - ⇒ To select a single element, click the element title in the **Timeline** window.
 - ⇒ To select a range of elements, click the first element title and [Shift] + click a range of elements in the **Timeline** window.
 - ⇒ To select a range of cells, press [Alt] and drag the pointer through the cells you want to select. To select adjacent cells, they must all be in drawing or image elements.
3. Drag the selected items to the **Library** window. **Toon Boom Studio™** assigns an icon to represent the contents of the template and assigns a temporary name.
 4. Type the name of the new template, replacing the default name, and press [Enter]. To better organize your project or global templates, you can create *Catalogs* (which are similar to folders).

See Also

Editing Templates on page 412
Importing Multimedia Files into the Library on page 413
Renaming Templates on page 414
Deleting Templates on page 415
Viewing a Template's Properties on page 415
Organizing Templates in Catalogs on page 423 .
Using Templates on page 417
Renaming Templates on page 414
Using Templates on page 417

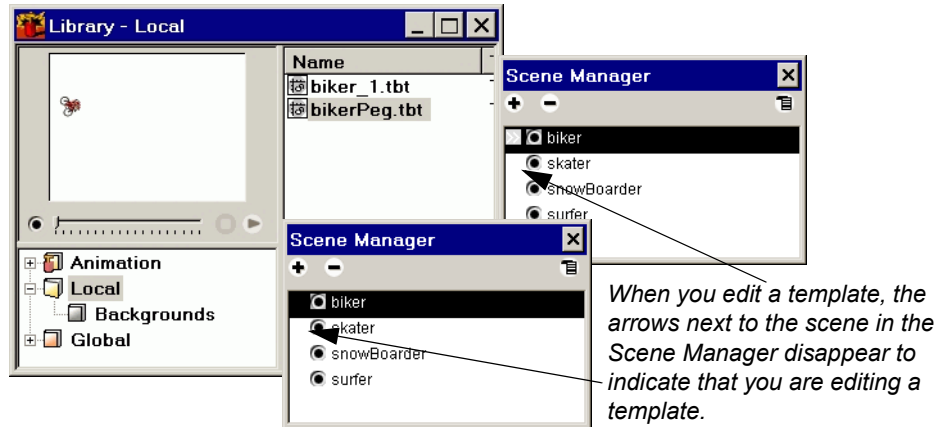
Editing Templates

You can modify the content of global or local templates. **Toon Boom Studio™** updates all animation sets that link to templates you edit.

To edit templates, follow these steps:

1. In the **Library** window, right-click the template you want to edit and select **Edit Template** from the pop-up menu.

The contents of the template you are editing appear in the **View** windows, the title bar on the Exposure Sheet and Timeline windows changes to indicate that you are editing a template, and the identification of the active scene changes in the **Scene Manager**.



2. Now that you are in template editing mode, you can change the contents of the template in the **View** windows, **Exposure Sheet** window or **Timeline** window.

3. Save your template.
 - Select **File > Save** to save the changes to the local and global template, as well as the animation set.
 - Select **File > Save Global Library** to save the contents of the global library only and not the animation set.
4. To exit the edit template mode, right-click the template and select **Return to Scene**. You can also double-click the scene name in the **Scene Manager**.

See Also

Using Templates on page 417

Creating Templates on page 410

The Library Window on page 404

Renaming Templates on page 414

Deleting Templates on page 415

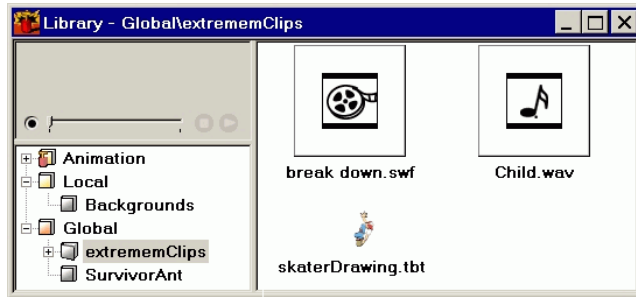
Importing Multimedia Files into the Library

If you have a SWF file, a sound file, an image, or even another template that is not currently in your animation set, you can import it into the Library window so that you can manage and re-use it.

To create templates from multimedia files, follow these steps:

1. Right-click in the right panel of the **Library** window and open the **Import** menu.
2. Select what you want to import from the following choices:
 - **Image File**: import any bitmap image supported by your version of QuickTime®.
 - **Movie File**: import an SWF file.
 - **Sound File**: import any sound file supported by your version of QuickTime®.
 - **Template File**: import a template created by **Toon Boom Studio™**.

3. Browse to the folder that contains the file you want to import, select the file, and click **OK**.



We imported an SWF, a sound, and template file into the Library.

See Also

Using Templates on page 417
Creating Templates on page 410
The Library Window on page 404
Renaming Templates on page 414
Deleting Templates on page 415

Renaming Templates

When you create a template, **Toon Boom Studio™** assigns a default name to it. You can rename the template at any time. Renaming a template does not affect the items it contains.

To rename a template, follow these steps:

1. Right-click the template you want to rename and select **Rename Template** from the pop-up menu.
2. Type the new template name and press [Enter] or click outside the template icon.

See Also

Using Templates on page 417
Creating Templates on page 410
Importing Multimedia Files into the Library on page 413
The Library Window on page 404
Deleting Templates on page 415

Deleting Templates

When you don't need a template anymore, you can simply delete it from your library. Deleting a template does not affect the contents of the Timeline or Exposure Sheet window, unless you linked the template to a scene.

To delete a template, follow these steps:

- Right-click the template you want to delete and select **Delete Template** from the pop-up menu.

See Also

Using Templates on page 417

Creating Templates on page 410

Importing Multimedia Files into the Library on page 413

The Library Window on page 404

Renaming Templates on page 414

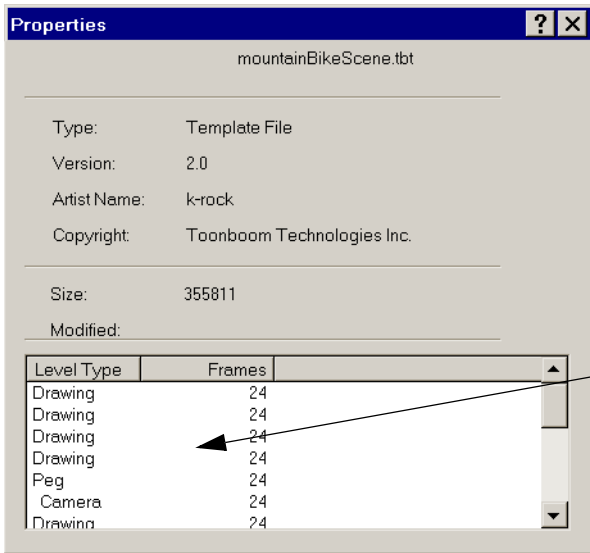
Viewing a Template's Properties

When you create a template, **Toon Boom Studio™** uses an icon to help you remember what it contains. If you need more information about the template, you can view the template's properties. You can see the following information:

- the type and version of the template
- who created the template, when it was created, and any copyright information. You can configure the artist's name and copyright information using the General tab in the Preferences dialog box.
- the size of the template
- the contents of the template

To view a template’s properties:

- Right-click the template and select **Template Properties** from the pop-up menu. The **Properties** dialog box opens.



In addition to the properties of the template, you can see the type of elements that are in the template as well as their duration.

See Also

- Defining the Template Author and Copyright on page 426
- Creating Templates on page 410
- Renaming Templates on page 414

Using Templates

After you create templates, you can build the content of your animation with work you have already done.

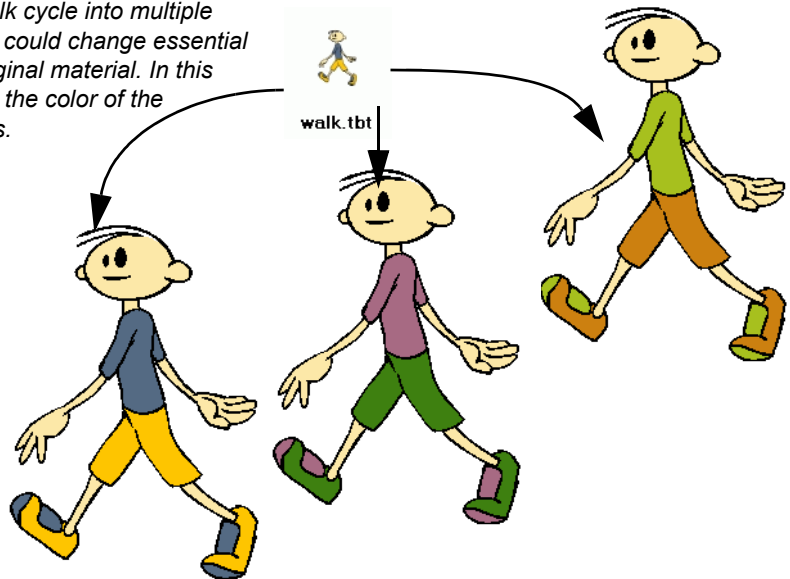
For example, if you are working on an animated series that uses the same opening and ending sequences, you can create templates from these sequences and simply bring them into each new episode.

You can either copy or link templates into your animation.

- When you copy templates into your animation, **Toon Boom Studio™** adds the contents of the template into your animation set folders, increasing the file size of your animation, and expands the template contents so that you can edit them.

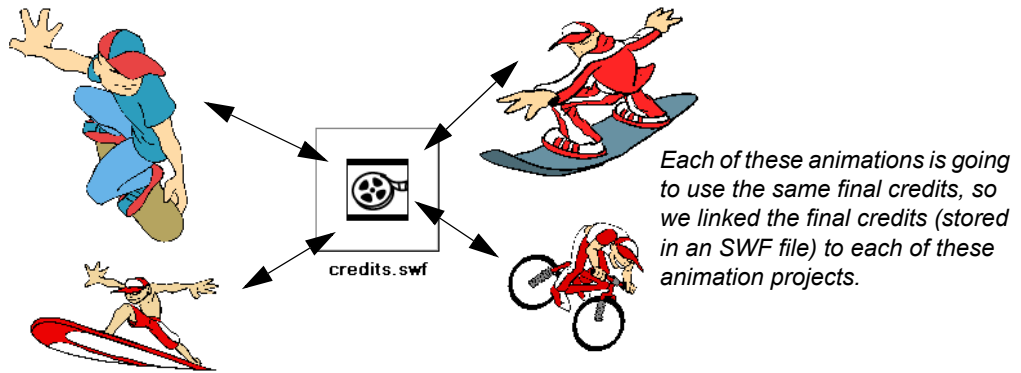
Copying templates is a great way of building your content from basic material that you can modify.

We copied this walk cycle into multiple scenes so that we could change essential qualities of the original material. In this case, we changed the color of the character's clothes.



- When you link templates, **Toon Boom Studio™** makes a Media element, which references the template file. You cannot edit the contents of a media element. However, if you edit the template, all sources that link to that template are updated too.

Linking templates is particularly useful for frequently used content, like credits or logos, which must remain the same for all productions. It also keeps the file size of your animation small by referring to re-usable items rather than duplicating them.



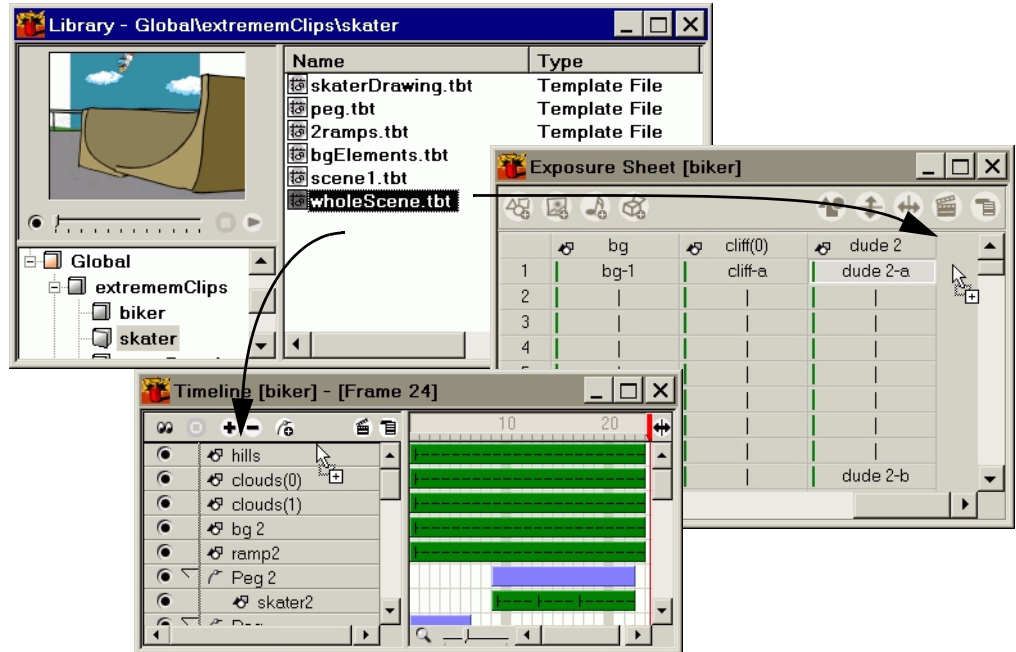
See Also

- Copying a Template into Your Animation on page 419
- Linking Templates to Media Elements on page 420
- The Library Window on page 404
- Creating Templates on page 410

Copying a Template into Your Animation

You can drag a template from the Library to the Exposure Sheet or Timeline window to add its contents to your animation.

Toon Boom Studio™ displays the contents in the **View** windows, where you can edit them, and adds the contents to your animation folder.



Copying templates into your animation will increase the file size of your movies. You can link templates to your animation to keep the file size of your animation small.

To copy a template into your animation, follow these steps:

1. Select the template you want to use from the **Library** window.
2. Drag the template to the **Timeline** or **Exposure Sheet** window. The mouse pointer displays a plus (+) sign when it is in a position where you can add it.
 - If your template contains only one type of content (say bitmaps), you can add it to an existing bitmap element.
 - If your template contains multiple elements, you will not be able to add it to an existing element if that element is not compatible with the template. You must drag templates that contain multiple elements just outside an element column or row to add it to the animation.

When you copy templates that have multiple elements to the **Exposure Sheet**, you will not see those elements that can't be displayed in **Drawing Mode**, like pegs and cameras. However, you will be able to see them when you switch to **Sceneplanning Mode**.

See Also

Linking Templates to Media Elements on page 420

The Library Window on page 404

Creating Templates on page 410

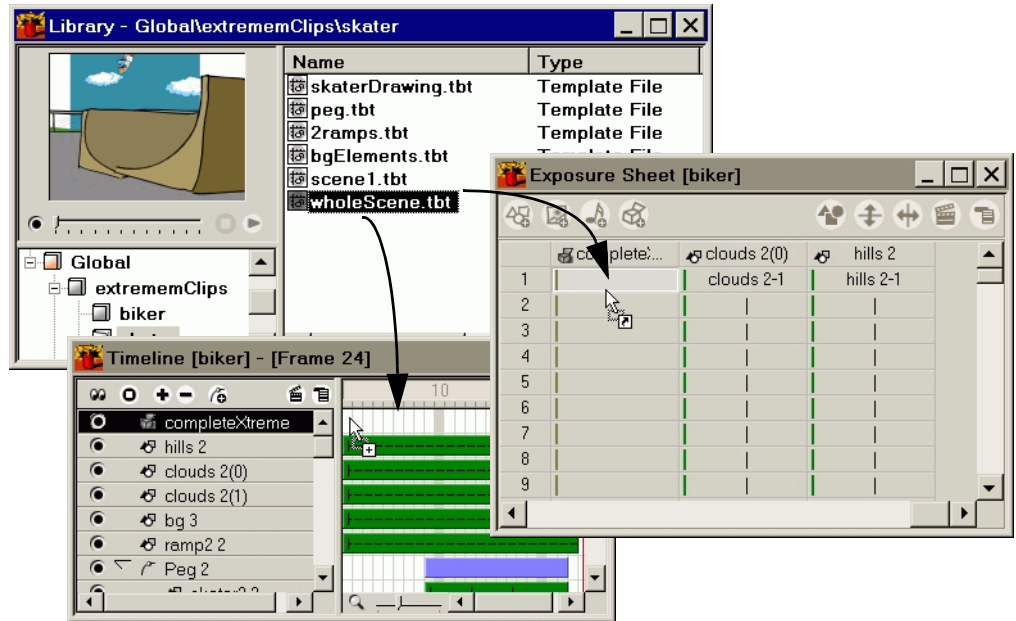
Linking Templates to Media Elements

You must use media elements to link templates to your animations. Media elements identify the contents they contain as references to a centrally stored file. If the template you link contains multiple elements, all of those elements are composited into one element, the media element.

Linking templates has two advantages:

- It helps you keep the file size of your Macromedia® Flash™ animations small. For more information on reducing the file size of your final animation, see *Optimizing your Animation for the Web*.
- It helps you update and manage frequently used material in a central location.

If the contents of the template are updated, **Toon Boom Studio™** will update all animations that use the template.



To link a template to a media element, follow these steps:

1. Select **Element > New > Media Element**. A new element appears in the Exposure Sheet and Timeline window.
2. In the **Library** window, select the template you want to link and drag it to the media element you created.

You can also create a media element as you link a template, by pressing [Alt] as you drag the template to the Exposure Sheet or Timeline window.

Toon Boom Studio™ links to the original file and displays the contents of the file in the **View** windows.

See Also

Cutting, Copying and Pasting Linked Media Content on page 422
 Creating Templates on page 410

Cutting, Copying and Pasting Linked Media Content

When you have a media element that contains some linked content, it occupies a range of cells in the element. You can modify this content by cutting, copying, and pasting the occupied cells.

This does not affect the original content, but does allow you to change the timing of the animation in the media element. You can also change the timing of the contents of a media element by changing its exposure or creating cycles.

To move the contents of the cells in the media element, follow these steps:

- 1.** Select the cell or range of cells you want to move or copy.
- 2.** Right-click the select and select either **Cut** or **Copy**.
 - **Cut:** the system removes the contents of the selected cells, moving the following cells to fill their place.
 - **Copy:** the system makes a copy of the selected cell(s), leaving the original cell(s) unchanged.
- 3.** Right-click a cell in a media element and select **Paste**. The cut/copied cells appear in their new cells.

See Also

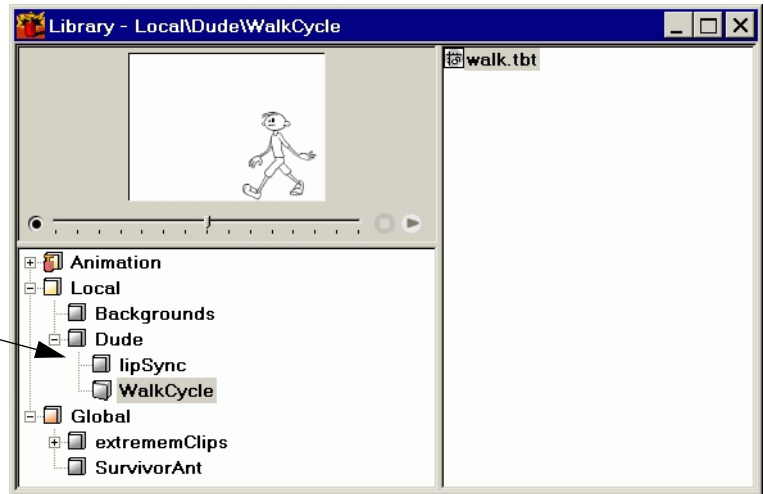
Linking Templates to Media Elements on page 420
Timing/Exposing Drawings and Images on page 401
Creating Cycles on page 395

Organizing Templates in Catalogs

As your projects evolve and grow, you may need to sort and group related templates. You can create template *Catalogs* within the Local or Global library folder. This catalog acts like a file folder and allows you to create groups of related templates.

For example, if you had a collection of templates for the different characters in your project, you could create a catalog for each character, with sub catalogs for specific aspects of the character's design.

In this example, the Dude catalog contains a number of other catalogs, one for dude's lip sync images and the other for his walk cycle.



To organize your templates in catalogs, follow these steps:

1. Select the Local or Global library folder.
2. Right-click in the template section of the **Library** window and select **New Catalog** from the pop-up menu. An empty catalog appears in the window with a default name.
3. Type a new name for the catalog or accept the default name. You can change the catalog name at any time.

4. To move or copy an existing template to a catalog, select the template and drag it to the catalog you want.
 - If you simply drag the template file, **Toon Boom Studio™** moves the selected template.
 - If you press [Ctrl] while you drag the template file, **Toon Boom Studio™** places a copy of the template in the selected catalog.
5. To create a template in a catalog, select the catalog from the left pane of the **Library** window and then drag the contents from the Exposure Sheet or Timeline window to the catalog.

See Also

Renaming Catalogs on page 424

Deleting Catalogs on page 425

The Library Window on page 404

Creating Templates on page 410

Renaming Catalogs

When you create a catalog, **Toon Boom Studio™** assigns a default name to it. You can rename the catalog at any time. Renaming a catalog does not affect the templates it contains.

You cannot rename the main Local or Global catalogs in the left panel of the Library window. You can only rename the catalogs within the Local or Global catalogs.

To rename a catalog, follow these steps:

1. Right-click the catalog you want to rename and select **Rename Catalog** from the pop-up menu.

You can also select the catalog, click it once, and leave your pointer over the catalog name until the name become editable.
2. Type the new catalog name and press [Enter] or click outside the template icon.

See Also

Organizing Templates in Catalogs on page 423

Deleting Catalogs on page 425

The Library Window on page 404

Creating Templates on page 410

Deleting Catalogs

When you don't need a catalog anymore, you can simply delete it from your library. When you delete a catalog, you are also deleting all the templates in it.

Deleting a catalog or its templates does not affect the contents of the Timeline or Exposure Sheet window.



You cannot delete the main Local or Global catalogs in the left panel of the Library window. You can only delete the catalogs within the Local or Global catalogs.

To delete a catalog, follow these steps:

- Right-click the catalog you want to delete and select **Delete** from the pop-up menu.

See Also

Organizing Templates in Catalogs on page 423

Renaming Catalogs on page 424

The Library Window on page 404

Creating Templates on page 410

Defining the Template Author and Copyright

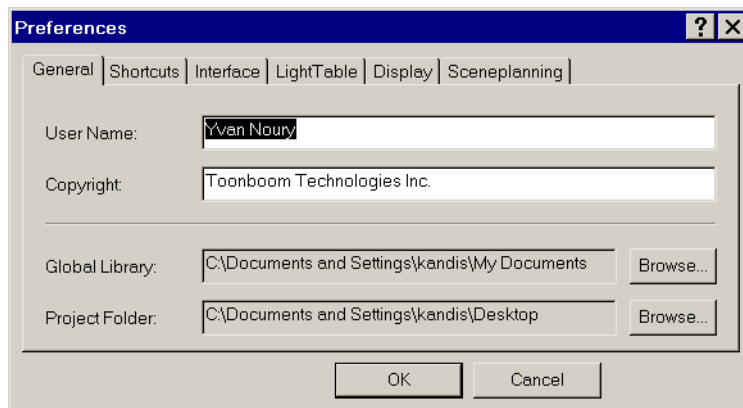
When you create a template, **Toon Boom Studio™** automatically assigns a default name and copyright owner.

You can view a template's author name and copyright notice in the template's Properties dialog box.

To define the template author and copyright owner, follow these steps:

1. Select **Edit > Preferences**. The **Preferences** dialog box opens
2. Select the **General** tab.

You can change information about templates you create in the General tab.



3. Type the name of the person who will be creating the templates from now on in the **User Name** field.
4. Type any copyright information in the **Copyright** field.
5. Click **OK** when done. Any template you create from now on will use the author and copyright information you just entered in the **General** tab.

See Also

Viewing a Template's Properties on page 415
Creating Templates on page 410
The Library Window on page 404

Chapter 13

Playback and Rendering

This chapter explains how to generate a preview of your scene or of all the scenes in your animation set. It also explains how to export your animation set's scenes to the final SWF format.

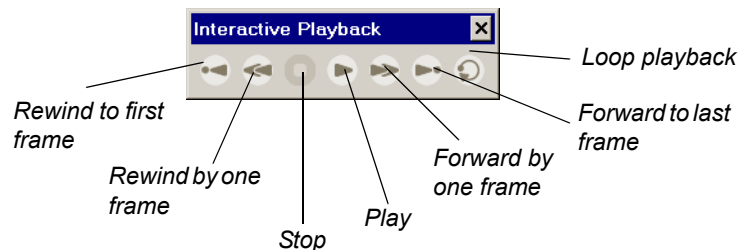
This chapter contains the following topics:

- **Previewing a Scene Interactively on page 428**
- **Real-Time Playback on page 431**
- **Exporting to Flash on page 433**
- **Exporting to QuickTime on page 438**
- **Exporting to Plazmic SVG on page 442**

Previewing a Scene Interactively

At any point in the development of your animation, you can see a preview of the current scene using Interactive Playback. During Interactive Playback, you can change the content that is playing back. For example, you can add drawings and elements to the playback selection.

In Interactive Playback, the animation appears in the View windows in Drawing Mode and Sceneplanning Mode. Interactive Playback will not play your animation in real-time and you will not hear the contents of any Sound elements.



To playback your animation using Interactive Playback, follow these steps:

1. Select the drawings/elements you want to playback.
 - Use the **Show/Hide** buttons in the **Exposure Sheet** window and **Timeline** window to display the elements you want to preview.
 - In the **Exposure Sheet** window, drag your mouse pointer through the cells you want to preview.
 - In the **Timeline** window, change the playback range to select the frames you want to preview.

If you select nothing, the entire contents of the scene plays back.

2. Press **Play** from the **Interactive Playback** toolbar.

All of the selected content plays in sequential order in the **View** windows 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.

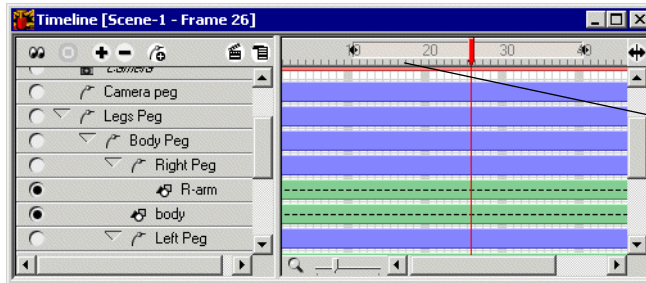
See Also

Setting the Playback Range in the Timeline on page 429
 Real-Time Playback on page 431
 Exporting to Flash on page 433
 Exporting to QuickTime on page 438

Setting the Playback Range in the Timeline

By default, when you want to preview the animation in your scene from Sceneplanning Mode, **Toon Boom Studio™** starts at the current frame in the scene and plays until the last frame, unless you stop the playback manually.

If you want to preview only a specific segment of your scene, you can customize the playback range by setting a start and end frame of the playback.



*When you playback the scene, **Toon Boom Studio™** plays only the frames that fall between these two markers.*

To set the playback range in the Timeline, follow these steps:

1. Right-click the frame counter at the top of the **Timeline** window and select **Playback Range > Free**. When you select this option, two markers appear in the frame counter to mark the start and end frames.

The **Automatic Fit** option (selected by default) sets the playback range to the entire length of the scene. It adjusts the playback range automatically as your scene expands or shrinks.

2. Select the start frame in the playback range by dragging the start frame marker (the marker on the left) to where you want to start the playback range.

You can also right-click the frame counter, select **Change Playback Range Start Frame**, type the start frame number, and click **OK**. The start frame marker appears at the frame you selected.

3. Select the end frame in the playback range by dragging the end frame marker (the marker on the right) to where you want to end the playback range.

You can also right-click the frame counter, select **Change Playback Range End Frame**, type the end frame number, and click **OK**. The end frame marker appears at the frame you selected.

4. Click **Play** ► in the **Interactive Playback** toolbar to preview the animation in the current playback range.

See Also

Previewing a Scene Interactively on page 428

Real-Time Playback on page 431

Real-Time Playback

You can render your movie or scene to play it back in real-time and see how your animation will look in its final state.

There are three different ways you can playback rendered animation in real-time:

- You can playback all or selected content from Drawing Mode, without any effects built in Sceneplanning Mode.
This is particularly useful if you want to check the timing of a cycle in real-time.
- You can playback the current scene with the effects you built in Sceneplanning Mode.
This shows you the entire scene as it will appear in the final movie.
- You can playback all visible scenes in the movie, including all Sceneplanning Mode effects.
This will show you how the visible scenes in your movie fit together.

To playback Drawing Mode content, follow these steps:

1. Select the cells you want to playback. If you want to playback all of the content, you don't have to select anything.
 - Drag your mouse through the cells you want to playback in real-time.
2. Select one of the following commands from the **Play > Drawing Mode Current Scene** menu.
 - Select **Selection** to play only the cells you selected.
 - Select **All** to play the contents of the entire **Drawing Mode** scene.

The **Rendering** progress dialog box opens as **Toon Boom Studio™** renders your animation.

When the render is complete, the **Playback** window opens with your animation and begins to playback your movie from the first frame.



The display settings of the Drawing Mode window (zoom and pan) determine what part of your scene is rendered for playback when you use the commands in the Drawing Mode Current Scene menu.

3. Use the controls in the **Playback** window to adjust the playback of your movie.



To playback the entire scene with Sceneplanning Mode effects, follow these steps:

1. Select the elements you want to display in the rendered animation.

Use the **Show/Hide** buttons next to the element names in the **Timeline** window to select the elements you want to render.

2. Select **Play > Sceneplanning Current Scene**.

To playback selected scenes in the movie in real-time, follow these steps:

1. Show/hide the scenes you want to playback from the **Scene Manager** window.
2. Select **Play > Movie**.

See Also

Previewing a Scene Interactively on page 428

Exporting to Flash on page 433

Exporting to QuickTime on page 438

Exporting to Flash

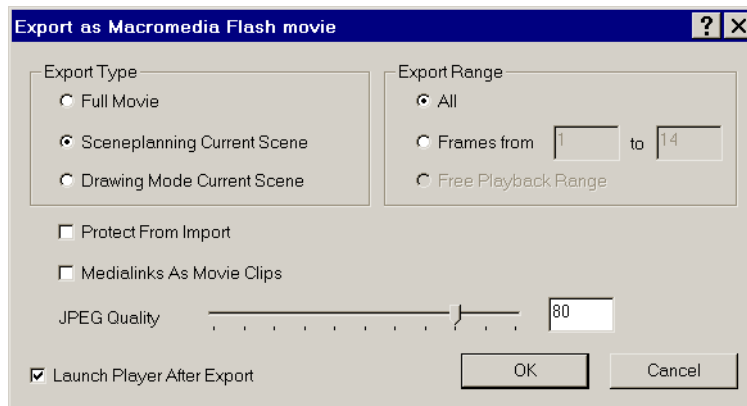
When your animation is done and ready to share with your audience, you are ready to export a Macromedia® Flash™ movie.

You can distribute your Macromedia® Flash™ movie as is or you can add interactive controls to your movie in Macromedia® Flash™.

To export to Macromedia® Flash™ format, follow these steps:

1. Select **File > Export > Macromedia Flash Movie**. The **Save As** dialog box opens.
2. 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.



3. Select the part of the movie that you want to export from the **Export Type** panel. You have the following choices:
 - **Full Movie**: exports all the scenes in the current animation set. The order the scenes appear in is displayed in the **Scene Manager** window.
 - **Sceneplanning Current Scene**: exports the contents of the scene or template currently open in **Toon Boom Studio™**.
 - **Drawing Mode Scene**: exports the contents of the scene or template from **Drawing Mode**. This option does not include any of the effects you created in **Sceneplanning Mode**.

4. In the **Export Range** panel, select the content you want to export.
 - **All**: exports the entire scene or movie. If you selected **Full Movie** in the **Export Type** panel, **All** is selected by default and you cannot change it.
 - **Frames** from: enter the selection of frames you want to export.
 - **Free Playback Range**: If you are in Sceneplanning Mode, this option is available. It exports the playback range you set up in the **Timeline** window. If there is no playback range, the option is not available.
 - **Selection**: If you are in Drawing Mode, this option is available when you select to export the Drawing Mode scene. It exports the frames you have selected in the Exposure Sheet window.
5. Select the **Protect From Import** checkbox to prevent people from accessing the content of your final SWF file.
6. Select **Media Links as Movie Clips** to convert media elements in your animation into Macromedia® Flash™ movie clips.

If you select this option, Media elements that you re-use throughout your animation will be converted to movie clips to keep the file size of your animation small.

However, Macromedia® Flash™ does not import movie clips from the SWF format. If you plan on importing your animation into Macromedia® Flash™, all but the first frame of the movie clip will appear in Macromedia® Flash™. Of course, if you use the **Toon Boom Studio™** Importer for Macromedia® Flash™ MX, you won't have to use the SWF file anyway and this will not even be a concern!

7. Use the **JPEG Quality** slider to select the quality of the graphics in the animation.

The lower you set the quality, more compression you apply, and the smaller your final file size becomes. However, the quality of your images may be noticeably affected.

8. To view the Macromedia® Flash™ movie after the compilation is complete, select the **Launch Player After Export** checkbox.

Your Macromedia® Flash™ movie appears automatically in the Playback window when the export has finished.
9. 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**.

See Also

Setting the Frame Rate and Size of Your Movie on page 39

Setting the Playback Range in the Timeline on page 429

Adding Interactivity to a Flash Movie on page 435

Adding Interactivity to a Flash Movie

Toon Boom Studio™ is a powerful animation tool. Its drawing, inking and painting, and sceneplanning features provide you with the tools you need to produce quality animation for the Web.

But **Toon Boom Studio™** is not a programming tool. You cannot add interactivity to your animations with it. When you need to add interactivity to your animations, you need to use Macromedia® Flash™. When you use **Toon Boom Studio™** and Macromedia® Flash™ together to create interactive animations, you can maximize the strengths of these two tools.

With the powerful scripting language of Macromedia® Flash™, **ActionScript**, you can make your movies interactive. Here are some ideas:

- You can allow viewers to control the playback of your movies.
- You can also turn drawings you created in **Toon Boom Studio™** into Macromedia® Flash™ symbols that you can program with behaviors or use repeatedly throughout your animations.

For example, you can turn a drawing of a character you created in **Toon Boom Studio™** into a button that users click to move to another scene.

The **Toon Boom Studio Importer** (TBSi) for Macromedia® Flash™ MX is the bridge between these two powerful animation tools.

See Also

Transforming Drawings into Buttons on page 437 .

Adding Playback Controls to your Movie on page 436

Exporting to Flash on page 433

Adding Playback Controls to your Movie

For some of your animations, you may want your viewers to decide when they want to advance to the next scene. Or, you may want your viewers to select the scene they want to see.

- If you have Macromedia® Flash™ MX, you can use the **Toon Boom Studio Importer** (TBSi) for Macromedia® Flash™ MX, you can import all of the **Toon Boom Studio™** scenes into a new movie and add playback controls.
- If you don't have Macromedia® Flash™ MX, you must export each scene as a separate SWF movie, import each SWF into a new scene, and then add user controls between scenes.

To add playback controls between scenes of your movie, follow these steps:

1. Get your **Toon Boom Studio™** animation into Macromedia® Flash™.
 - If you have Macromedia® Flash™ MX, use **TBSi** to import your movie as separate scenes.
 - If you don't have Macromedia® Flash™ MX, you must export each scene as a separate **SWF** file and then import each into a new scene in Macromedia® Flash™.
Macromedia® Flash™ imports the **SWF** file as one layer in the scene you have selected.
2. Add a **Stop Frame** action to the last frame of each scene.
3. Add a button to a key frame in the last frame of each scene.
4. To the button, add a **GoToandPlay** action that advances the movie to the selected scene.
5. Repeat steps 2 through 4 for each scene in your animation.

For more information on using Macromedia® Flash™ to add playback controls to your SWF animation, refer to the Macromedia® Flash™ documentation.

See Also

Transforming Drawings into Buttons on page 437
Exporting to QuickTime on page 438
Exporting to Plazmic SVG on page 442
Exporting to Flash on page 433

Transforming Drawings into Buttons

When you import **Toon Boom Studio™** movies into Macromedia® Flash™ MX or export your animation as a **SWF** file, each drawing becomes a symbol. In Macromedia® Flash™, you can easily convert these symbols into programmable buttons.

To transform a Toon Boom Studio™ drawing into a programmable button, follow these steps:

1. Create the drawing in **Toon Boom Studio™**.
2. Get the drawing into Macromedia® Flash™.
 - If you have Macromedia® Flash™ MX, use **TBSi** to import the selected drawing.
The drawing becomes a symbol in the Library, with the same name it has in **Toon Boom Studio™**.
 - Export the drawing as an **SWF** file and import the file into a Macromedia® Flash™ movie.
Macromedia® Flash™ recognizes drawings in your SWF file as separate symbols that you modify.
3. Use Macromedia® Flash™ commands to convert the symbol into a button.

For more information on using Macromedia® Flash™ to add interactivity to your SWF animation, refer to the Macromedia® Flash™ documentation.

See Also

Adding Playback Controls to your Movie on page 436
Exporting to QuickTime on page 438
Exporting to Plazmic SVG on page 442
Exporting to Flash on page 433

Exporting to QuickTime

QuickTime® is an important format when developing work for distribution on film or TV. With various QuickTime® editing tools, you can create effects that add a new dimension to your animated movies.

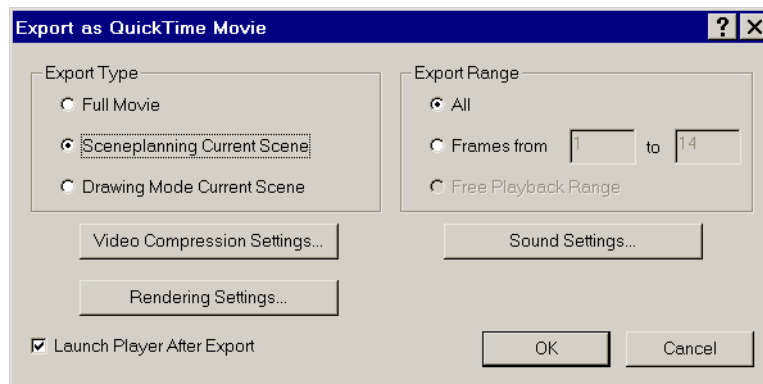
The QuickTime® export renders your movie into bitmap format based on the camera resolution you set in the Animation Properties dialog box. During the QuickTime® export, you will have the opportunity to select various settings for the quality and compression of images and sound in the final QuickTime® movie.

Toon Boom Studio™ preserves alpha channel information in the QuickTime® file so that you can use this channel to build effects in video editing programs like Adobe® After Effects®. **Toon Boom Studio™** exports the alpha channel as **Straight (Unmatted)**. To export the alpha channel to QuickTime®, you must select **Millions of Colors+** in the Video Compression Settings dialog box.

To export the animation to QuickTime® format, follow these steps:

1. Select **File > Export > QuickTime Movie**. The **Save As** dialog box opens.
2. Type the name of the movie in the **File Name** field, select a location, and click **Save**.

The **Export as QuickTime Movie** dialog box opens.

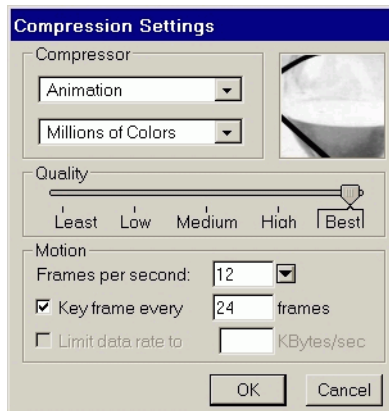


3. Select the part of the movie that you want to export from the **Export Type** panel. You have the following choices:

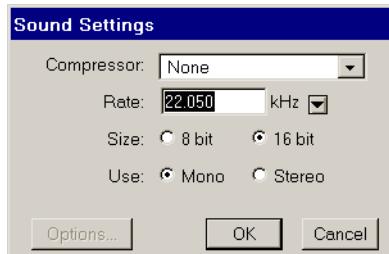
- **Full Movie:** exports all visible scenes in the current animation set. The order the scenes appear in is displayed in the **Scene Manager** window.
 - **Sceneplanning Current Scene:** exports the contents of the scene or template currently open in **Toon Boom Studio™**.
 - **Drawing Mode Current Scene:** exports the contents of the scene or template from **Drawing Mode**. This option does not include any of the effects you created in **Sceneplanning Mode**.
4. In the **Export Range** panel, select the content you want to export.
 - **All:** exports the entire scene or movie. If you selected **Full Movie** in the **Export type** panel, **All** is selected by default and you cannot change it.
 - **Frames from:** enter the selection of frames you want to export.
 - **Free Playback Range:** If you are in Sceneplanning Mode, this option is available. It exports the playback range you set up in the **Timeline** window. If there is no playback range, the option is not available.
 - **Selection:** If you are in Drawing Mode, this option is available when you select to export the Drawing Mode scene. It exports the frames you have selected in the Exposure Sheet window.
 5. To view the QuickTime® movie after the compilation is complete, select the **Launch Player After Export** checkbox.

Your QuickTime® movie appears automatically in the Playback window when the export has finished.

6. To set the compression settings on the movie, click the **Video Compression Options** button. The **Compression Settings** dialog box opens. Use the controls in this dialog to select your settings and click **OK** when you are done.
 - Selecting a compression codec designed to handle video may generate visible artefacts. For best result, we recommend that you select a codec that uses lossless compression, like None, BMP, PNG, TIFF, TGA or Animation.
For information on video compressors supplied with QuickTime®, see <http://developer.apple.com/techpubs/quicktime/qtdevdocs/INMAC/QT/iqImageCompMgr.7.htm>
 - To export the alpha channel to QuickTime®, you must select **Millions of Colors+**.

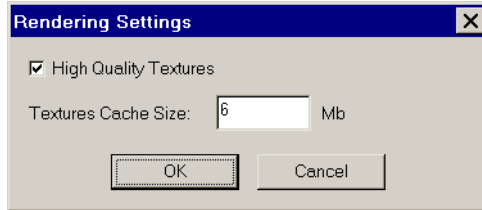


7. To set the qualities of the sound track, click the **Sound Settings** button. The **Sound Settings** dialog box opens. Use the controls in this dialog to select your settings and click **OK** when you are done.



8. To set the qualities of the bitmap render to QuickTime®, click the **Rendering Options** button. The **Rendering Settings** dialog box opens.

- **High Quality Textures:** this option filters bitmaps you import into **Toon Boom Studio™** to remove unwanted noise.
- **Texture Cache Size:** because bitmaps are often reused from frame to frame, **Toon Boom Studio™** uses RAM cache to reuse bitmap images and reduce demands on your processor. This option changes the amount of memory used from your RAM, but does not affect the quality of the final output. It is best to set this value as large as possible; 40% of your total memory is a good standard.
- Click **OK** when you are done.



For information on the different settings, see the QuickTime® documentation.

9. Click **OK** when you've configured your settings.

A progress bar appears to show you the progress of the export. If you want to cancel the export, click **Cancel**.

See Also

Reordering Scenes on page 44

Setting the Frame Rate and Size of Your Movie on page 39

Exporting to Flash on page 433

Exporting to Plazmic SVG on page 442

Exporting to Plazmic SVG

Toon Boom Studio™ supports content development for wireless devices with export to Plazmic™ Mobile SVG. Plazmic™ Mobile SVG can be played on wireless devices with the Plazmic Media Engine™, as well as other SVG players.

Plazmic Media Engine™ supports interactivity. If you want to add interactivity to your wireless animation, you must edit the SVG file, which is XML and can be opened in any text or XML editor.

Because the Plazmic™ Mobile SVG file is intended for wireless devices, which have memory and resolution constraints, there are a number of features that are not supported. It is essential to keep your animations as simple as possible for wireless devices.

- All lines are converted to one pixel in width.
- Gradients, textures and bitmaps are not supported.
- Sound is not supported.
- Color transform and clipping mask effects are not supported.
- Elements that you rotate and scale dynamically in Sceneplanning Mode tend to create large-sized files.
- Elements that change composition order in Sceneplanning Mode also create large-sized files.

Before you can export, you must create the Plazmic™ Mobile SVG command that appears in the **File > Export** menu.

(Windows® 2000) To create the Plazmic™ Mobile SVG command, follow these steps:

1. Click the Windows® **Start** menu and select **Settings > Control Panel**.
2. Double-click the **System** icon.
3. In the **Advanced** tab, click the **Environment Variables**. The **Environment Variables** dialog box opens.
4. Create a new user variable:
 - Click **New**. The **New User Variable** dialog box opens.
 - In the **Variable** field, type: TBS_ENABLE_PLAZMIC_EXPORT

- In the **Variable Value** field, type: 1
You can actually type any value except 0 to enable this variable. If you type 0, you will disable the variable.
- 5. Close all of the dialog boxes and re-start **Toon Boom Studio™**.
- 6. Check the **File > Export >** menu to see that the **Plazmic Mobile SVG** command is there.

(Windows® 98 and ME) To create the Plazmic™ Mobile SVG command, follow these steps:

1. Open the `autoexec.bat` in a text editor such as Notepad.
2. Create a new line and type: `set TBS_ENABLE_PLAZMIC_EXPORT=1`
3. Save the file and restart Windows®.

To export to Plazmic™ Mobile SVG, follow these steps:

1. Set the size of your movie to 120 (width) x 130 (height). To play in the Plazmic Media Engine™, your movie must have these dimensions.
2. Select **File > Export > Plazmic Mobile SVG**. The **Save As** dialog box opens.
3. Type the name of the movie in the **File name** field, select a location, and click **OK**.

Toon Boom Studio™ renders your animation in the Plazmic™ SVG format.

After you export your animation to the Plazmic™ Mobile SVG format, you are not done. To package the SVG file so that it can be played on the Plazmic Media Engine™, you must use the tools provided by Plazmic™. The Plazmic™ Software Development Kit is on the **Toon Boom Studio™** CD. For further information on preparing the SVG file, please see the Plazmic™ documentation.

See Also

Setting the Frame Rate and Size of Your Movie on page 39
Exporting to Flash on page 433
Exporting to Plazmic SVG on page 442

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