

# Toon Boom STUDIO

User Guide

# Legal Notices

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# Chapter 1 Introduction

Toon Boom Studio is a multi-technique, vector-based software that is suitable for all your animation projects, be they clean and classic, to futuristic and cutting-edge. It possesses leading edge features based on industry proven technology, making it the most dynamic and exciting software on the market. Further, between the step-by-step instruction contained in this guide, the software's user-friendly interface and a handful of helpful online resources, you'll find that Toon Boom Studio is also ideal for simply learning how to animate.

Toon Boom Studio allows you to produce at least six different styles of animation:

- Traditional Animation
- Traditional Digital Animation, also known as Tradigital Animation
- Cut-out Animation
- Bone Animation
- Stop-motion Animation
- Rotoscoping

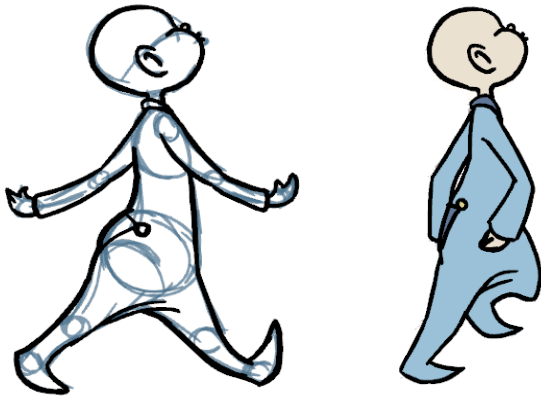
The following chapters will give a greater insight into how Toon Boom Studio works and what you can do to produce some great animation:

- Starting Your Project, on page 19
- Discovering the Interface, on page 45
- Drawing and Design, on page 67
- Adding Colours, on page 105
- Importing Artwork, on page 141
- Layers and Timing, on page 175
- Traditional Digital Animation, on page 211
- Creating a Cut-out Puppet, on page 233
- Bones, on page 251
- Animating a Puppet, on page 291
- Sound and Lip-sync, on page 313
- Stop-motion Animation, on page 335
- Scene Setup, on page 347
- Enhancing With Effects, on page 401
- Exporting Your Project, on page 441

## Animation Techniques in a Nutshell

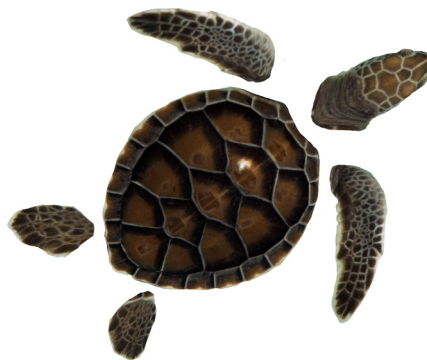
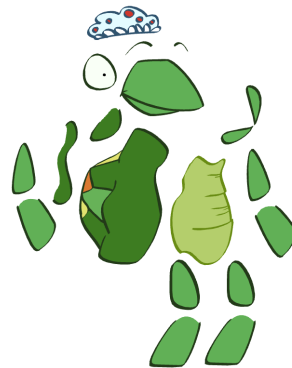
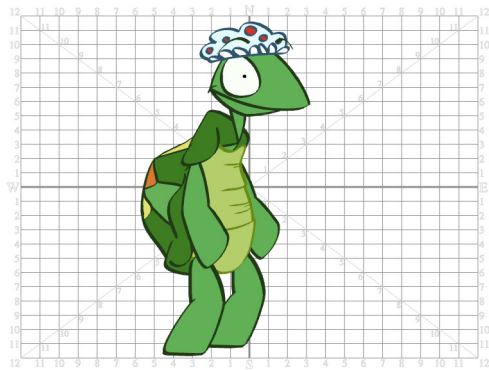
With Studio you can still animate traditionally, much the way animators have done for decades by simply putting pen to paper. Traditional animation methods can be used with Toon Boom Studio, from drawing your rough animation (the underlying structure of your animation), to cleaning it up, tracing solid and clean lines over the rough to achieve closed zones, and last, but not least, inking it.

For example, to animate a walk-cycle, you will begin with the torso movements and the legs. Head, arms and clothes are added later, during the secondary phase.



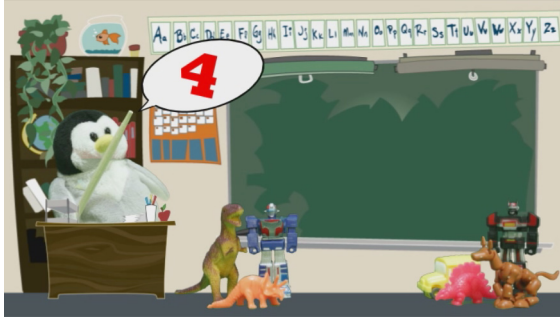
You can also work in a traditional fashion, but animate digitally. Traditional digital animation, also known as hand-drawn or tradigital animation, is the process of drawing every frame of an animation directly in Toon Boom Studio without the use of paper or scanner.

With Toon Boom Studio's extensive set of tools, you are able to create animated puppets from your drawings or photographs. This technique is known as cut-out animation because of the way you move cut-out pieces around instead of drawing.

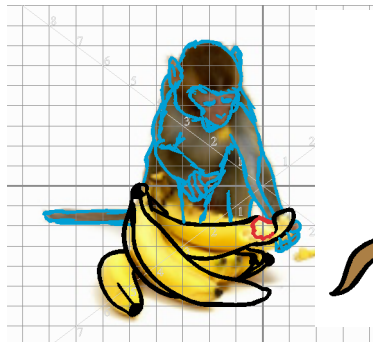


The Toon Boom Studio cut-out puppet principle is very similar to cutting up a character drawn on a sheet of paper and assembling the pieces using little brass fasteners. You create a drawing for each of your character's body parts and then attach them in the Timeline view. Next, you can articulate the character and animate it by giving it a slightly different pose on each frame.

Toon Boom Studio has stop-motion animation capabilities, and its intuitive and easy to use image capture window allows you to set-up and capture all your images. Stop-motion animation has been around since animators first realized that all it took to produce the illusion of motion was to nudge a clay figure, puppet or object and then document it in a series of snapshots. In this digital age, the process has only become simpler and more fun, as it is now possible to mix stop-motion animation with numerous other animation techniques. It is as easy as plugging in your recording device, be it a digital camera, video camera or webcam, followed by adjusting the focus in the software, keying out the background and taking the snapshots. In short: endless possibilities.

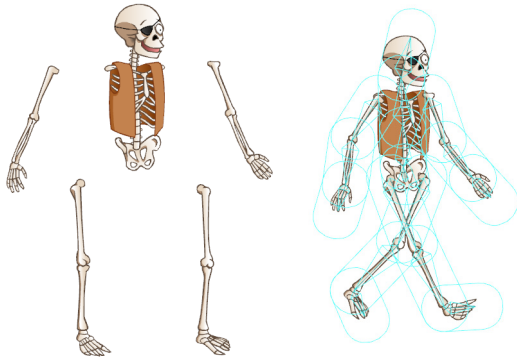


Toon Boom Studio also has rotoscoping capabilities for those of you who want to experiment or produce realistic movement in your characters.

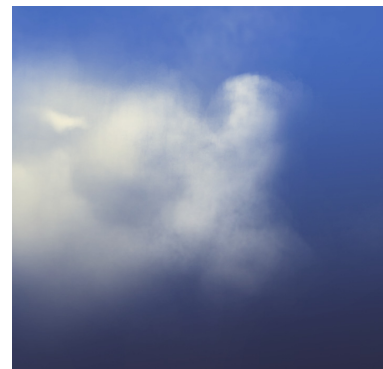
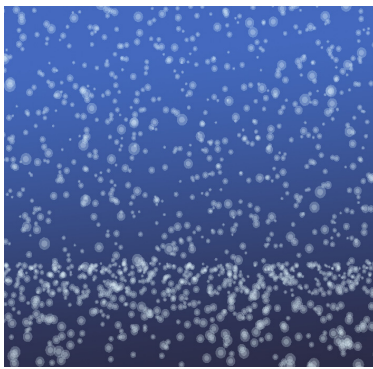
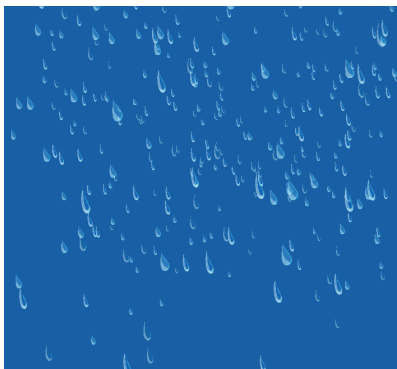


This technique requires the animator to trace over each frame of a live-action movie, a process that results in some very realistic movement. This rotoscoping technique was invented by the animation pioneer Max Fleischer in 1915 and involved projecting a movie frame-by-frame onto an optically correct glass surface. The animator would then trace over the character projected on the glass to produce a cel. The equipment used in this process is called a Rotoscope, an ingenious invention that has now been replaced by the computer. Toon Boom Studio's rotoscoping capabilities allow you to import a video clip and trace over it directly in the software.

Mastering the fundamentals of animation is not only important in and of itself, it also affords you the necessary foundation from which you can grow to master both the nuances and ever-evolving techniques of this dynamic art form. This is the beauty of Toon Boom Studio; within it are the tools required to create, experiment with and finally master your technique, along with some exciting bells and whistles. Nothing beats seeing your first animated character spring to life, even if it lasts but a few seconds. But there are also thrills to be had in taking things further; applying sophisticated colour-schemes to your scene or overall project, for example, or by incorporating sound effects and dialogue into your narrative. With the introduction of its new and improved Bone tools, Toon Boom has expanded upon, yet simplified, the unlimited options inherent in an animated character. Unlimited options leading to endless story possibilities, that is!



Toon Boom has also taken the ability to enhance your work to a whole new level by introducing effects based on the natural world, from volcanic eruptions, to earth quakes, rain showers, hail, snow and fog. Blurring the edges of a candle can add a little extra atmosphere to a dimly-lit room, while casting a very long shadow may serve to add a note of realism or mood to an out-of-doors encounter. Master the basics, indeed, but how wonderful that when even in mastering the basics, the sky is the limit!





## Documentation

In addition to this user guide, there are other useful documents at your disposal. Learn how to get the most out of Toon Boom Studio with our easy-to-use documentation package:

- **Integrated Help**  
In Toon Boom Studio, select **Help > Toon Boom Studio Help** to open the help system in your default browser.
- **Tooltips**  
To view a short description of a menu command or toolbar button, known as a tooltip, simply hover over a button with your mouse.
- **Context-Sensitive Help**  
To view a brief, but somewhat more detailed description of a menu command or toolbar button, select **Help > What's This** and then click on the item. A pop-up window opens, displaying pertinent information regarding the item you clicked on.

## Toon Boom Studio - Resources

Toon Boom's Resources tools, available at [toonboom.com/home-users/toon-boom-studio/resources](http://toonboom.com/home-users/toon-boom-studio/resources), will help you to broaden your Toon Boom Studio and general animating skills. Choose from basic to advanced tools to take your animation know-how to the next level. You can also open the Resources page from Toon Boom Studio:

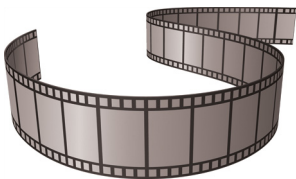
Select **Help > Toon Boom on the Web** to open the Toon Boom website in your default Web browser. Select Home Users > Toon Boom Studio > Resources.

## Workout Series



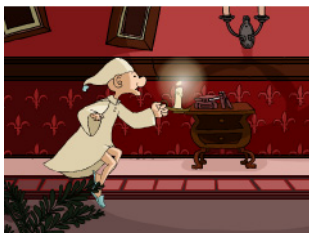
The Toon Boom Animation Workout Series is a dedicated program of exercises designed to help you develop the skills and techniques necessary to get the most out of Toon Boom Studio. Sharpen your skills while raising your endorphins!

## Video Lessons



Toon Boom Studio Training Videos are the perfect way to gain first-hand instruction on how to use the software.

## Tutorials



Video and print tutorials will get you started and introduce you to the application one step at a time.

## Tips and Tricks



From bitmaps to going bananas (with rotoscoping), from model sheets to motion points, visit the Tips and Tricks resource section on the Toon Boom Animation website for nifty pointers on how to get the most - and the most fun - from your animation projects.

## Templates



Use the ready-made templates to create an animation quickly and easily, while learning how to draw and animate in the Cut-out style!

A wide variety of character and prop collections are available in our online store.

## Remember to Register Toon Boom Studio

Register now! Become a member of the Toon Boom community!

As a registered member you can:

- Easily recover your activation key 24/7
- Reinstall your product anytime, anywhere
- Get info on software updates and upgrades
- Subscribe to exclusive announcements

## Get Help and Hone Your Skills!

### Knowledge Base

Find answers to your Toon Boom Studio questions in the Knowledge Base, located on our website at:  
<http://www.toonboom.com/support/kb/categories/Toon-Boom-Studio>.

### User Forum

Registered Toon Boom Studio members can access and post questions, queries and comments on the User Forum. Share your thoughts and learn what others in the Toon Boom community are up to, or simply view the Forum content as a guest.

### Animation Glossary

A comprehensive glossary of terms is available on the Toon Boom website. Access it through the Knowledge Base at:  
<http://www.toonboom.com/support/kb/glossary.php>



# Chapter 2 Starting Your Project

Toon Boom Studio is a great tool for learning animation with, it is both easy to use and powerful, just what you need when you are starting out! Using Studio, you can easily create a project and see it through to the finished output.

In this chapter, you will learn the following:


- Launching Toon Boom Studio, on page 20
- Welcome Screen, on page 21
- Creating and Opening a Project, on page 22
- Changing Your Project's Format, on page 27
- Organizing Your Work, on page 28
- Adding Template Copyright and User Name Information, on page 31
- Setting the Location of Global Library, on page 32
- Some Basic Animation Concepts, on page 33
- Planning Your Project, on page 38
- Help Tools, on page 40
- Preferences, on page 41
- What's Next?, on page 44


## Launching Toon Boom Studio

To use Toon Boom Studio you have to start it, this is called launching the application. It's easy to do, just follow the steps below. And remember, you can use Toon Boom Studio on Mac OS X or Windows operating systems.

To launch Toon Boom Studio, do one of the following:

- ▶ Mac OS X: Double-click on the Toon Boom Studio  icon or select **Applications > Toon Boom Studio 7.1**

- ▶ Windows: Double-click on the Toon Boom Studio  icon or select **Start > Programs > Toon Boom Studio 7.1 > Toon Boom Studio 7.1** .

- ▶ Windows Vista: Double-click on the Toon Boom Studio  icon or select **Start > All Programs > Toon Boom Animation > Toon Boom Studio 7.1 > Toon Boom Studio 7.1**

Toon Boom Studio opens, displaying the Welcome Screen.



## Welcome Screen

When Toon Boom Studio launches, the Welcome Screen appears. This screen is also accessible once you are inside a project. To display the Welcome Screen from within the application you need to close the current project by selecting **File > Close**. You can also use the default keyboard shortcut [Ctrl]+[W] (Windows) or [⌘]+[W].

**NOTE:** This command closes the scene which is currently open.



The Welcome Screen allows you to:

- Create new projects
- Select the format, frame rate and camera size of your project
- Access the User Guide
- Work on a sample project
- View your Toon Boom Studio account
- Access the Learn Toon Boom Studio area
- View the Showcase and User Stories area
- Access Support

## Creating and Opening a Project

As you start your project in Toon Boom Studio, you need to understand about the format and the frame rate you will use. -

- What are Frame Rate and Format?, on page 22
- Selecting a Preset Format and Frame Rate, on page 23
- Creating a New Project from the Welcome Screen, on page 24
- Creating a New Project from the File Menu, on page 25



### What are Frame Rate and Format?

When you create an animation the images you animate must move fluidly to produce the correct effect. If they don't you will have a jumpy animation which won't look good. To get a fluid movement between the drawings you need several images per second. You need a minimum of 12 images per second, any slower than that and the animation becomes jumpy. An image can also be called a frame. So the Frame Rate is the number of frames you play per second in your animation.

Next, we will talk about the format of your project.

The format of your project is the size of your camera frame in pixels.

Ok, so what is a pixel? You may not be familiar with this term, but you have probably seen it when you magnify a digital photograph. A pixel is the smallest element of an image displayed on a monitor or TV screen. "Pixel", short for Picture Element, is a single point in a graphic image. It is a small sample of an image, a dot, a square or a very small section made out of smooth filtering. If you zoom-in close enough on a digital image, you will see the pixels, they look like small squares of different colours and intensity.

Depending on the type of project you want to do, you will need a different image size. For example, if you want to put your project on the web, you will probably export your movie as a small size so that it is light to playback once on the web. The larger the images are, the heavier the project is, but also, the better the quality is. If you want to export your project for the theatre, you will need to create your project using a large format so that the image is of a high quality and looks good on the big screen.



North American TV Format

Also, some display media such as iPod, TV or theatre have an exact format requirement. For example, the standard TV format has a 4:3 size ratio, meaning that the width of your scene has to be an equivalent of 4 units compared to 3 units for the height. You can find most of them in the presets list provided in the Welcome Screen.

So, just to recap the Format is the size of your camera frame in pixels and matches the width and height required for the medium you want to show your final movie in.



## Selecting a Preset Format and Frame Rate

Preset formats are available within Toon Boom Studio and are listed by name when creating a new animation project. This table shows the animation properties which are available using Toon Boom Studio. You can also set the properties manually.

FORMAT	CAMERA SIZE (pixels)	REAL FRAME SIZE (pixels)	FRAME RATE (fps)	PREFERRED OUTPUT
<b>Web Use</b>				
Small Web Animation	160 x 120	160 x 120	12	QuickTime or Flash
Medium Web Animation	320 x 240	320 x 240	12	QuickTime or Flash
Large Web Animation	480 x 360	480 x 360	12	QuickTime or Flash
iPod and PodCasting	320 x 240	320 x 240	12	QuickTime or Flash
Windows Mobile Full Screen	240 x 320	240 x 320	12	Flash
Windows Mobile Browser	240 x 268	240 x 268	12	Flash
<b>PC Video</b>				
VGA	640 x 480	640 x 480	24	QuickTime or Flash
SGA	800 x 600	800 x 600	24	QuickTime or Flash
XVGA	1024 x 768	1024 x 768	24	QuickTime or Flash
SXGA	1280 x 1024	1280 x 1024	24	QuickTime or Flash
UXGA	1600 x 1200	1600 x 1200	24	QuickTime or Flash
<b>DVD and Broadcasting</b> (note the difference between the camera size and the size of the frame shown on screen).				
DV NTSC	720 x 540	720 x 480	29.97	DV/DVCPRO NTSC
DV NTSC Anamorphic	853 x 480	720 x 480	29.97	DV/DVCPRO NTSC
DV PAL	768 x 576	720 x 576	25	DV/DVCPRO PAL
DV PAL Anamorphic	1024 x 576	720 x 576	25	DV/DVCPRO PAL
<b>HDTV monitors:</b>				
HDTV 720 24p	1280 x 720	1280 x 720	24	QuickTime h.264
HDTV 1080 24p	1920 x 1080	1280 x 720	24	QuickTime h.264
HDTV 1080 25p	1920 x 1080	1280 x 720	25	QuickTime h.264
<b>Film</b>				
2K Film 4:3	2048 x 1536		24	
Custom				

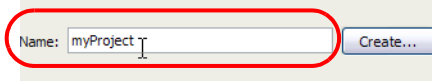
## Creating and Opening Projects from the Welcome Screen

Using the Welcome Screen, you can create new projects and open existing ones.

### Creating a New Project from the Welcome Screen

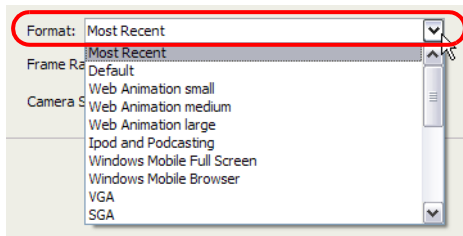
To create a project from the Welcome Screen:

1. In the Name field, type the name for your new project. Make sure to give it a name which easily identifies the project, such as *JumpingFrog*. That way when you have several projects you can locate specific ones more easily.

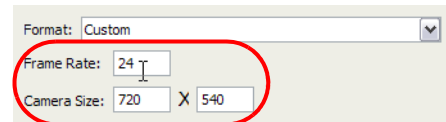


2. In the Format drop-down menu, select the format in which you want to produce your project. You can choose from a wide variety of presets such as Web, iPod and DV. By default, the option selected is Most Recent. This means that it will use the last settings you chose when creating your last project.

When you create a project for the first time, it will use the settings marked in the Frame Rate and Camera Size field. By selecting any of the presets, the Frame Rate and Camera Size fields will be automatically populated with the corresponding values.



3. If you prefer to use your own settings, you can type the Frame Rate and the Camera Size directly in the fields.



4. Once the information is in place, click on the Create button to make your project. The new project opens.

Now that you have created a new project, the next step is to save it to the correct location.

It is a good idea to follow a structure when saving your work so that your files are not scattered all over your computer.



Refer to the *Organizing Your Work* topic to learn more about structuring your files.

To save your project for the first time:

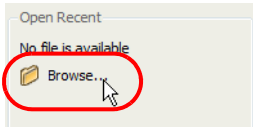
1. Select **File > Save As**. The default keyboard shortcut is [Ctrl]+[Shift]+[S] (Windows) or [⌘]+[Shift]+[S] (Mac OS X). The **Save As** dialog box opens.
2. In the Save As window, browse to the location where you want to save your project. If need be, rename it in the File Name field. Remember to give the project a name you can identify easily.
3. Click on the Save button to complete the operation.

## Opening a Project from the Welcome Screen

When you already have a project you may find that you want to reopen it to work on it some more or to make some adjustments. You can do that by using the Welcome Screen.

**To open a project from the Welcome Screen:**

1. In the Open Recent section, click on the Browse option.



The **Open** window appears.

2. Browse and select the file for the project you want to open.
  - ⇒ \*. **tbp** (Toon Boom Project) (Windows)
  - OR
  - ⇒ \*. **tbpd** (Toon Boom Studio Document) (Mac OS® X)

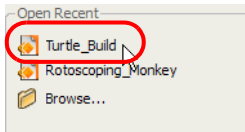
**NOTE:** This is why it is important to give each project a name you can identify it by. If you have several projects called *project1.tbp*, *project2.tbp* and *project3.tbp* it would be difficult to remember what was in each.

3. Click on the Open button to open the project.

If your project is already open and you want to work on a specific scene in that project you can also do that from the Welcome Screen.

**To open a recent project from the Welcome Screen:**

1. In the Open Recent section, select a project from the list.




2. Click on the project name to open the project.

## Creating and Opening a Project from the File Menu

If a project is already open and you want to create a new one, you can use the File menu.

### Creating a New Project from the File Menu


**To create a project from the File menu:**

1. Select **File > New**. You can also click on the New  button in the Main toolbar or use the default keyboard shortcut [Ctrl]+[N] (Windows) or [⌘]+[N] (Mac OS X).

The new project is created from the currently open project's settings.

### Opening a Project from the File Menu

**To open a project from the File menu:**

1. Select **File > Open**. You can also click on the Open  button in the Main toolbar or use the default keyboard shortcut [Ctrl]+[O] (Windows) or [⌘]+[O] (Mac OS X).

The **Open Project** browser opens.

2. Browse and select the \*. **tbp** (Toon Boom Project) file you want to open.
3. Click on the Open button to open the project.

**To open a recent project from the File menu:**

1. Select **File > Open Recent**.
2. In the Open Recent drop-down menu, select the project you want to open.
3. Click on the project name to open the project.
  - ▶ Select the **Clear Menu** command to remove all projects from the Open Recent list.

## Opening a Flip Boom Cartoon or Flip Boom All-Star Project

It is possible to open a Flip Boom (\*.fbp) or Flip Boom All-Star (\*.fba) project in Toon Boom Studio.

If you have another project open, you will be prompted to save it, and it will close after you confirm your choice.

### To open an existing Flip Boom Cartoon or Flip Boom All-Star Project:

1. Launch Toon Boom Studio to display the Welcome Screen.
2. Click on the Browse button to open the Open window.  
The **Open** dialog box appears.
3. In the Files of Type field, select Flip Boom Documents from the drop-down list.
4. Browse to the folder where your project is located.
5. Select the file with the FBP format.
6. Click on the Open button to open it.

The project opens in the Toon Boom Studio window.

## Opening an Animation-ish Project

It is possible to open an Animation-ish (.ish1, .ish2, .ish3) project in Toon Boom Studio.

If you have another project open, you will be prompted to save it, and it will close after you confirm your choice.

### To Open an existing Animation-ish Project:

1. Launch Toon Boom Studio to display the Welcome Screen.
2. Click on the Browse button to open the Open window.  
The **Open** dialog box appears.
3. In the Files of Type field, select Animation-ish Documents from the drop-down list.
4. Browse to the folder where your project is located.
5. Select the file with the ISH1, ISH2 or ISH3 format.
6. Click on the Open button to open it.

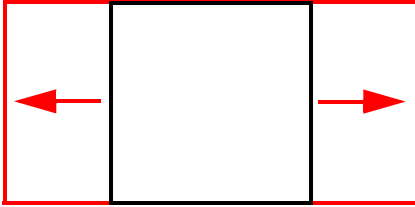
The project opens in the Toon Boom Studio window.

## Changing Your Project's Format

You can change your project's format or frame rate from the file menu.

**NOTE:** When you change the format of your project, if the size ratio is not the same, you may have to reposition some elements.

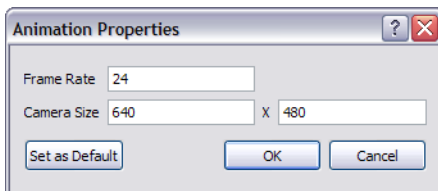
For example, if you change from a square format to a rectangular format, you will need to fill the sides of the screen.



**To change your project's format:**

1. Select **File > Animation Properties**.

The **Animation Properties** dialog box opens.



2. In the Frame Rate field, type the new frame rate for your project.
3. In the Camera Size field, type the new format for your project.
4. If you want this format to be used each time you create a new project, click on the Set As Default button.
5. Click on the OK button to complete the operation.

## Organizing Your Work

In order to start your project on the right track, it is a good idea to organize your files and directories properly.

In this section you will learn tips which will help you organize your work:

- Naming Your Files, on page 28
- Saving Files and Structuring a Project, on page 28

### Naming Your Files

In order for you to make it easier to remember what each project, layer, drawing or colour palette is, name your file with a relevant name representing the content of your project.

Make sure to give it a name which easily identifies the project, such as *JumpingFrog*. That way when you have several projects you can locate specific ones more easily.

We recommend that you name your scene using alphanumeric characters: a to z, 0 to 9 and underscore ( \_ ). Avoid spaces in the file names. Try to provide the maximum amount of information for future identification, which helps ensure that you do not mix up elements and lose information.

Here are some typical examples of project names:

- AdventureProject
- TurtleAdventure\_Episode001
- Turtle\_PuppetConstruction

### Saving Files and Structuring a Project

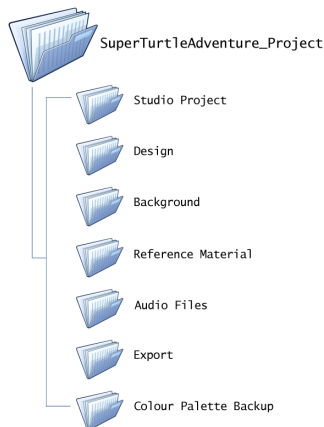
When you create your project, you must save it somewhere. It is a good idea to create a folder on your hard drive to contain all the elements of your project. Keeping everything together in one place is always useful for retrieving scenes, sounds, artwork or reference material.

There are many ways to structure your project folder, but here is an example you could use to start.

Before you save any elements in your production, you should decide on a project name, which should reflect the content or title. Use the name to create your main folder on your local hard drive, where you will save all of your production elements.

For example, the main directory could be called **SuperTurtleAdventure\_Project**.

Once your main folder is created, you should create a sub folder to contain the different categories of material you will store in it. For example, you could have categories such as:



- **Studio Project**  
In this folder, you can store the actual Toon Boom Studio projects.
- **Design**  
In this folder, you can store designs or any development drawings you have done for your project either on paper or in another software. You can scan your drawings and store them here.

- **Background**  
If you drew some backgrounds and painted them in a third party software or took some photographs to use as backgrounds in your scene, store them here.
- **Reference Material**  
To get inspiration for your project or to design your characters, you can search the internet to find pictures related to your project and store them here. You could also take photos with a camera and store them in this folder.
- **Audio Files**  
Store any music or dialogue tracks you will use in your movie, in this folder.
- **Export**  
Once a scene or your project is ready, you will export it into a movie format or image sequence. You can store all your exported material in this folder.
- **Colour Palette Backup**  
When you create characters and background, you will create a colour palette for each one of them. It is a good idea to export them from your project and store them in this folder as a backup in case you modify the colours by accident.

## User Interface Language

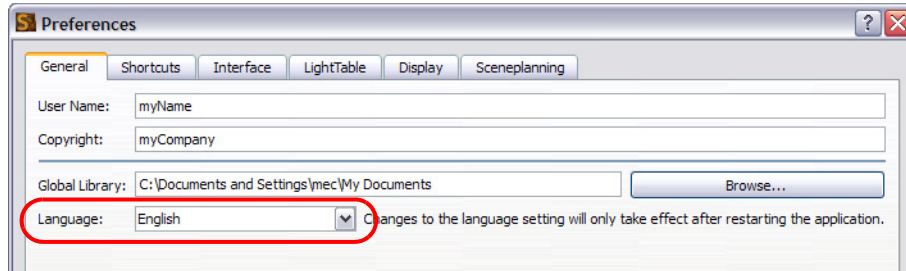
Toon Boom Studio's user interface is available in both English and Français. You can toggle between both languages at any time.

### Windows

To change the user interface language using Windows:

1. In the top menu, select **Edit > Preferences** (Windows).

The **Preferences** panel opens.



2. Go to the General tab.
3. In the Language drop-down menu, select either English or Français.
4. Click on the OK button.
5. Close the Toon Boom Studio application and restart it for the modification to take effect.

### Mac OS® X

To change the software's language when using Mac OS® X, you need to change your operating system's language preferences.

You can open the System Preferences option by selecting System Preferences from the Apple menu.



Refer to the Mac OS® X's documentation to learn how to setup your applications language preferences list. In this list, you need to make sure Français is a higher priority than English.

If Toon Boom Studio was already launched when you made the changes, you need to restart it in order for the new language settings to take effect.



## Adding Template Copyright and User Name Information

Toon Boom Studio allows you to set author and copyright information for the templates. A template is an asset that you can share and reuse. It can be anything from a drawing to a complete animation. When you store artwork in your Library, it is converted to a template and an author and copyright owner is assigned to it at the same time.

In order to set the author and the legally entitled copyright owner information, you must set your preferences prior to creating your templates. It is a good idea to set them as you start your project.

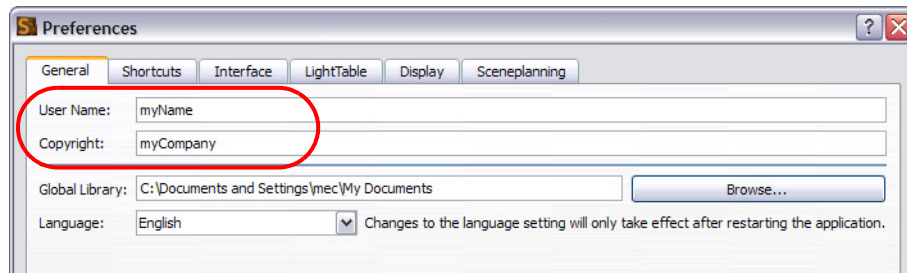
By default, the names assigned are the User Name and Copyright values entered while installing Toon Boom Studio on your machine.

**NOTE:** If you are unsure about entering the copyright information, contact your manager or company administrator for this information.

**To set the author and copyright owner:**

1. In the top menu, select **Edit > Preferences** (Windows) or **Toon Boom Studio 7.1 > Preferences** (Mac OS X).

The **Preferences** panel opens.



2. Go to the General tab.
3. In the User Name field, type the author's name.
4. In the Copyright field, type the owner or company name legally entitled to the copyright.
5. Click on the OK button.

## Setting the Location of Global Library

By default, when you install Toon Boom Studio, a main library folder is created. This library is called Global Library. You can store any kind of artwork as a template in this folder and you will be able to access it from any of your projects.

By default, the Global Library is installed in:

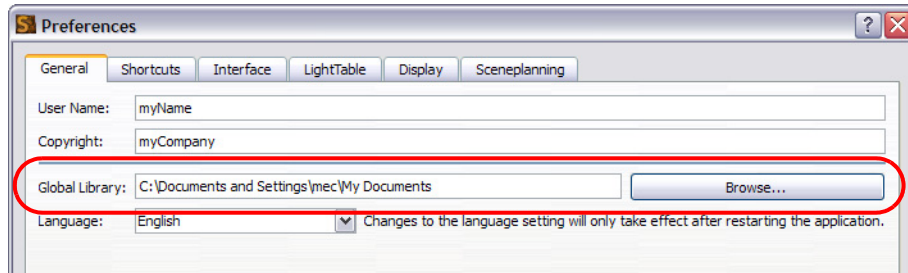
- Windows: C:\Documents and Settings\userName\My Documents\Toon Boom Studio - Global Library 7.1
- Mac OS X: /users/userName/Documents/Toon Boom Library 7.1

If you prefer to place the Global Library in another location, you can change it through the Preferences panel.

**To set the Global Library's location:**

1. In the top menu, select **Edit > Preferences** (Windows) or **Toon Boom Studio 7.1 > Preferences** (Mac OS X).

The **Preferences** panel opens.



2. Go to the General tab.
3. Beside the Global Library field, click on the Browse button.
4. Browse for the Global Library's new location.
5. Click on the OK button to close the Browse window.
6. Click on the OK button to close the Preferences panel.

## Some Basic Animation Concepts

In Toon Boom Studio, you will find several concepts based on traditional animation. Whether you are new to animation or an existing animator who wants to understand Toon Boom Studio, this section is for you.

You will learn about:

- Bitmap and Vector Graphics, on page 33
- Palettes, on page 34
- Xsheet and Timeline, on page 35
- Pegs, on page 36
- Multiplane Camera, on page 37

### Bitmap and Vector Graphics

There are two types of digital images:

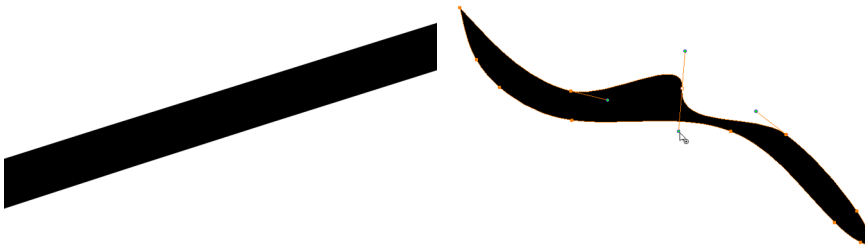
- Bitmap Image Types, on page 33  
Bitmap images consist of pixels and have a fixed size.
- Vector Image Types, on page 33  
Vector Image Types are composed of points and Bezier curves and have no fixed size.

#### Bitmap Image Types



A bitmap image consists of pixels and has a fixed size. "Pixel", short for Picture Element, a pixel is a single point in a graphic image. It is a small sample of an image, a dot, a square or a very small section made out of smooth filtering. If you zoom in close enough on a digital image, you will see the pixels. They look like small squares of different colours and intensity. So, a bitmap image is composed of pixels and has a single resolution (size); if it is enlarged too much, it will start losing definition and pixels will start to appear. This is known as pixelation.

#### Vector Image Types



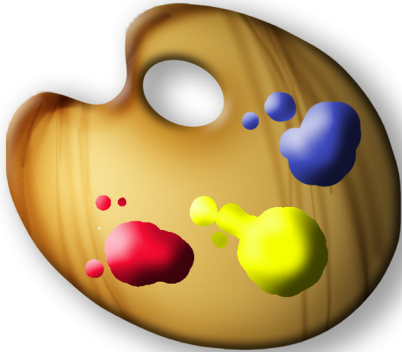
A vector-based image is composed of points and Bezier curves. The computer reads the points and traces the segments linking them to reproduce the image shape. There is no fixed size or resolution in a vector image. The graphic can be enlarged and distorted as much as desired and the system will simply recalculate the segments and rebuild the shapes. The segment's shape can be controlled with Bezier handles to curve and smooth it. Vector images are translated and displayed in pixels once the calculation is done.

## Advantages and Disadvantages of Bitmap and Vector Images

Bitmap images allow a more structured style. Since everything has a fixed size and is already made out of pixels, more effects are possible, such as blur, painting look, texturing, shading, etc. The bitmap format is excellent for creating backgrounds and overlay elements. However, because of the specific resolution, in order to zoom in on or to work in high resolution such as HDTV, the created file must be large.

Vector-based graphics can be very useful in creating large illustrations, as these graphics are resolution independent. The images can be enlarged significantly without losing definition. A vector-based image generally has a smaller file size than a bitmap, as it is a set of mathematical points. However, if there are many vectors composing the graphic, the result can be larger than a bitmap file. A vector shape can always be modified. It also creates very crisp images.

## Palettes



In colour animation, exact colours are used to paint each particular character. In order to maintain consistency between the scenes and episodes, a colour palette is created for each character, prop and effect throughout the project.

Before computers, painters used real colour pots mixed by a colour palette artist. Now, using computers, a digital colour palette is created. This allows consistent colour accuracy by always having the same group of colours associated with each character.

## Advantages of Using a Colour Palette

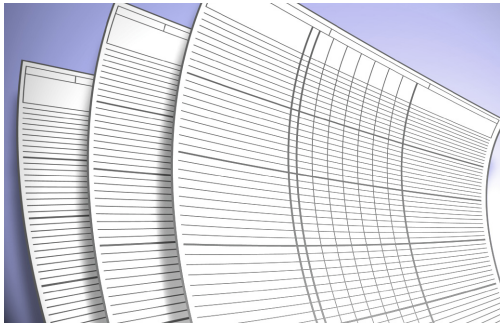
Using a colour palette has many benefits, including:

- Each character consistently retains their dedicated colours.
- You cannot accidentally use a colour which is not related to the character.
- Standardization and colour consistency throughout the project.
- Multiple artists can use the same colour palette and produce the same results.

## Xsheet and Timeline

The Xsheet or exposure sheet and the Timeline will be used a lot as you work on your project. This section explains what they are and how you can make use of them.

### Xsheet



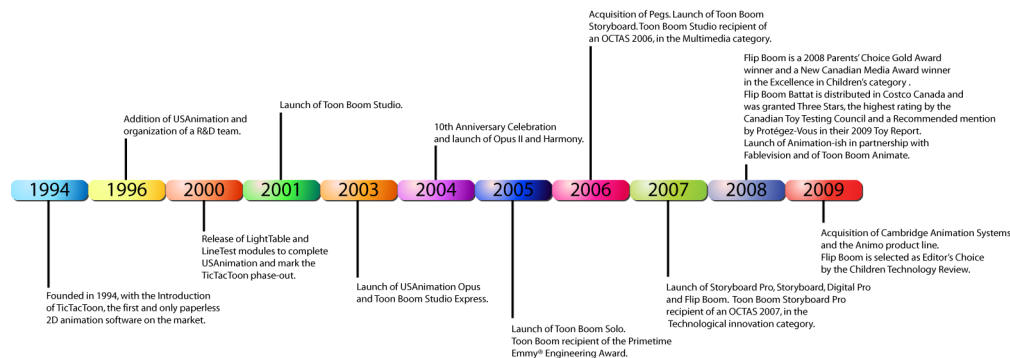
The Xsheet, also known as the Exposure Sheet or Dope Sheet, is used when an animator is planning a scene: the animator enters the layers, the name of the drawings and their exposure into the Xsheet. The Xsheet allows the user to see the timing in detail.

The Xsheet is composed of columns corresponding to the different layers. Each column is split into rows representing the frames in the scene. A paper Xsheet usually has eighty rows and ten columns. This enables the animator to associate a layer with a certain element and record at which frame each of drawing appears.

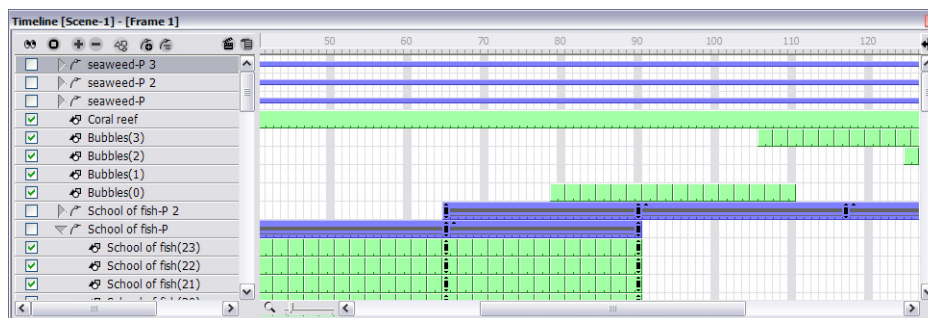
The traditional paper Xsheet was mainly created for the animator to write down the drawings timing and main actions. Toon Boom Studio uses a digital exposure sheet for the same purpose.

### Timeline

A Timeline is a horizontal and chronological representation of events occurring within a particular period.



In animation or digital process, the timeline is quite similar. The timeline is read from left to right and helps you to understand the scene and its timing. The frames or time codes are placed at the top and the elements or layers on the left. There is no drawing name or value information. The timeline displays the timing and elements in a simplified and systematic manner, making it easy to read globally. The timeline can be considered to be a quick overview of the whole scene.

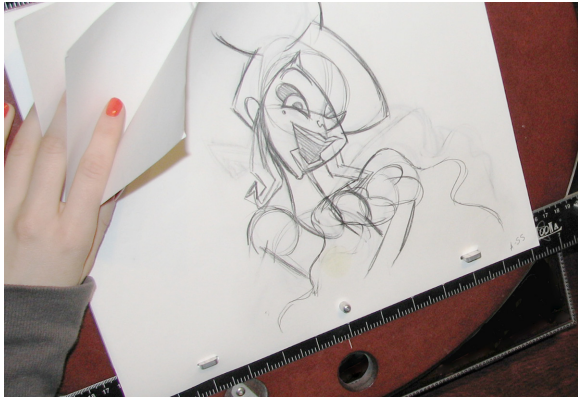


## Xsheet and Timeline Usage

Xsheets and Timelines are used for different tasks. When you do hand-drawn animation, the Xsheet is useful in keeping track of the drawings' ordering, names and timings. The Xsheet is used to reproduce the animator's work in the digital software or the camera.

For puppet animation, computer generated trajectories and distortions, there is a lot of extra information involved, including keyframes, velocities, function curves, etc. A keyframe is a computer generated key pose that contains values for the element's on-screen positioning; keyframes can be displayed in the exposure sheet as values. If there are too many keyframes, modifying one can be difficult due to all of the values present. This is why there are digital timelines. Their simplified version of the timing is quite useful in these situations. The timeline does not display drawing names or keyframe values, but instead it represents them as symbols, making it much easier for the eye to detect the desired element for modification. Although the name and value information is not directly displayed, the Xsheet is still very valuable when retrieving this type of information.

## Pegs



Pegs have been used for a long time in the animation process, mainly for registration purposes. Peg holes at the bottom or top of animation paper are used to keep all of the sheets even and at the same registration.

There are three peg holes in regular animation paper. The centre one is circular and the left and right ones are rectangular and situated 4 inches on either side of the centre one.

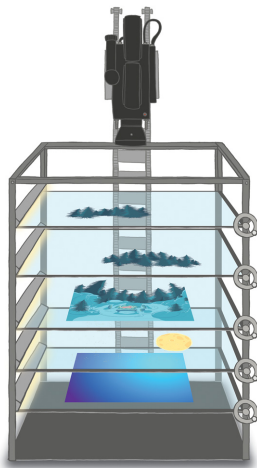
To keep the drawings together, we use a peg bar. This bar has three pins shaped exactly like the peg holes. Peg bars are normally found at the bottom and top of animation discs.

Before computers, the peg bars were also used to move layers under the camera stand. They were the equivalent of the digital trajectories. Toon Boom Studio makes use of these concepts to create animation and camera moves.

## Multiplane Camera



In an animation context, multiplaning is used to create a scene with a multiple amount of planes placed at different distances from the camera to recreate a perspective illusion. A plane is a layer or an element. In regular flat 2D scenes, all the elements are at the same distance superposed one on top of each other. So, when the camera moves, all the elements are moving at the same speed. In real life, all objects and elements are placed at different distances from our eyes so when we walk past, the closest objects appear to be moving away faster. The farthest ones, like mountains, are barely moving. In animation, that perspective effect has to be reproduced manually.



In 1933, the Walt Disney Company invented the multiplane camera. They got the idea from looking at methods used in the theatre to introduce perspective into a space with limited depth. In the theatre, cutouts and flat pieces were placed in a variety of layers in front of a backdrop which allowed actors to move through the various sets while giving the illusion of depth. Walt Disney's final design for the multiplane camera used this same concept. The multiplane camera which was set up vertically, much like a photographic enlarger, would shoot down through as many as five planes attached to vertical posts that allowed four of the planes to move independently of one another. The first two planes were used for animation, the next two were for backgrounds, and the fifth was fixed and used for sky backgrounds. The finished result produced a depth of perspective which had not previously been seen in animated film.

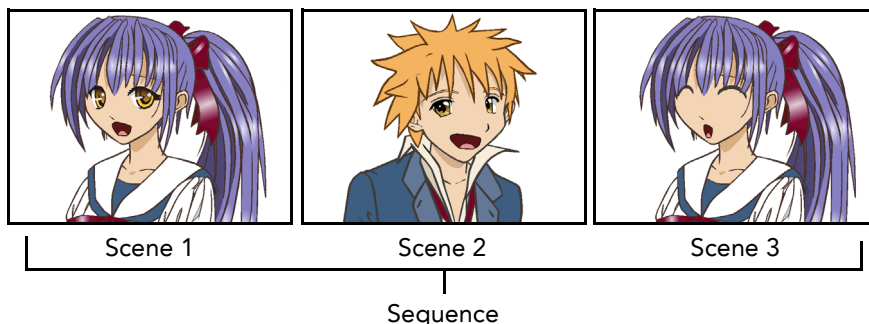
### Multiplane Usage

Multiplane camera effects can be created digitally. There is no longer a need to use the big multiplane camera. Multiplane shots are normally used to add depth to a scene to reproduce perspective effect more easily. They can also be used on smaller scale to make elements pass in front of and behind certain objects like trees or chair.

## Planning Your Project

Planning is an important step in creating your animation project. This involves listing the scenes that you need to animate, the characters you have to design and the different backgrounds to incorporate.

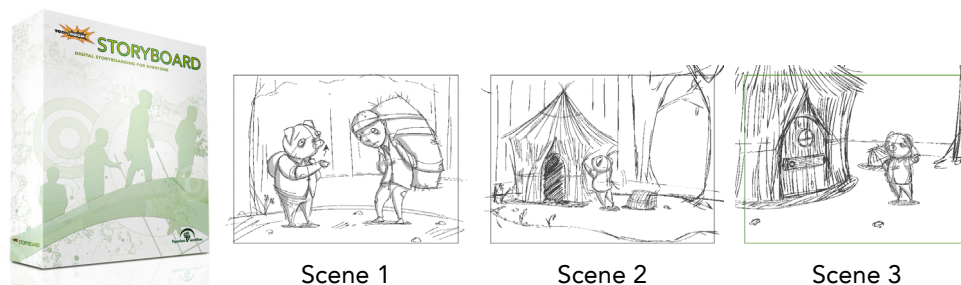
First of all, you need an idea. It does not need to be complicated at all. It can be a very simple idea such as a butterfly flying in a field of flowers. In this example, you would need to design a butterfly, a field full of flowers and a sky. Then you could compose a movie of two or three scenes.



In animation, a scene is the action happening in front of the camera while the camera does not change angle. As long as the camera does not stop “filming”, you are in the same scene. A good example would be two characters talking. When the camera is facing the first character, this is one scene. When the camera cuts and film the second character, you have a second scene. When the camera returns to the first character, you have a third scene, etc.

A group of scenes occurring in the same location about the same action or event is called a sequence. When there is a change of location or subject, it becomes a second sequence.

## Planning Your Scenes



To plan your scenes, you can create a simple list of the different scenes you would like to animate in your project, but if you want to take it further, you create a drawing representing each scene with a short action description. This concept is called storyboarding. You can create a simple storyboard on paper or you can use another Toon Boom software called Toon Boom Storyboard.

Once you know which scenes you need in your project, you use Toon Boom Studio to create your scene list based on your plan.

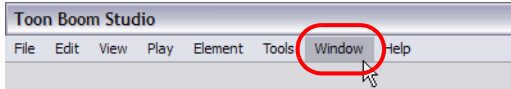


## Creating Scenes in Toon Boom Studio Project

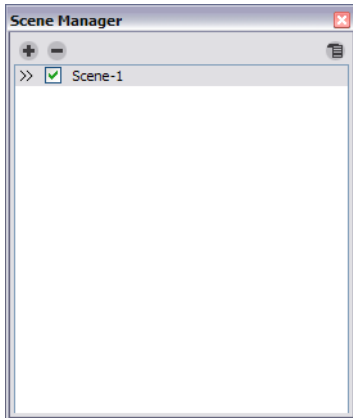
To create scenes in a Toon Boom Studio project, you need to use the Scene Manager window. Once your scenes are created, you will be able to move on to learn more about Toon Boom Studio and its interface, drawing tools and animation features.

**To create scenes in Toon Boom Studio:**





1. Select **Window > Scene Manager** or use the default keyboard shortcut [Ctrl]+[Shift]+[M] (Windows) or [⌘]+[Shift]+[M] (Mac OS X).



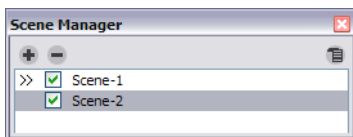
The **Scene Manager** dialog box opens.





By default, there is a scene created called **Scene-1**.

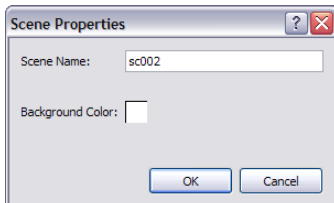
2. In the top area, click on the New Scene  button to add a new scene to your project. You can also click on the Menu  button and select **New Scene**.
  - ▶ Click on the Delete Scene  button to remove a scene from your list. You can also click on the Menu  button and select **Delete Scene**.

The new scene appears in your list.



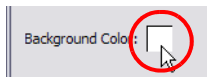
3. To open a scene from the list, double-click on the scene's name. You can also click on the Menu  button and select **Make Current**.
4. To rename the scene or change its properties, select the scene from the list, click on the Menu  button and select **Properties**.

The **Properties** dialog box opens.

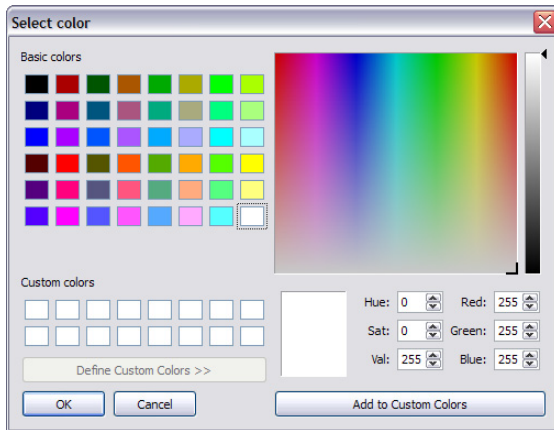



5. In the Scene Name field, type the new name for your scene.

- To change the colour of the scene's background, click on the colour swatch.



The Colour Picker panel opens.



- Select the desired colour and click on the OK button.
- Click on the OK button to close the Properties panel.
- Repeat the same process for all the scenes you want to add to your project.
- In the top menu, select **File > Save**. The default keyboard shortcut is [Ctrl] + [S] (Windows) or [⌘] + [S] (Mac OS X). You can also click on the Save  button in the Main toolbar.

## Help Tools

While learning and working with Toon Boom Studio, you have access to the following learning tools included with the application.

### Toon Boom Studio 7.1 User Guide

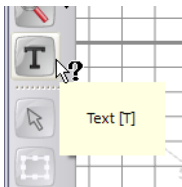
The User Guide explains in details each command and feature included in the application. It is available through the **Help > Help** menu, as PDF file and as a hard copy available for purchase. The User Guide can be prompted using the [F1] keyboard shortcut.

### Context Sensitive Help

The Context Sensitive Help is a built in help system prompting a short description of the selected tool or command. It is available in both French and English.

**To prompt the Context Sensitive Help:**

- Press the [Shift] + [F1] keyboard shortcut.
- Once you get the Question Mark logo, click on the button or menu item you want to learn about.



- A short description is displayed in the bottom Status bar and a longer description appears on mouse-over.

# Preferences

An important feature of Toon Boom Studio is the Preferences panel. From here you can customize your interface, tool behaviour and shortcuts. Throughout this guide, you are often required to go to the Preferences panel to set parameters and options.

In this section you will learn how to access the Preferences panel and also find a general description of its functionality.

This section covers the following topics:

- Preference Highlights, on page 41
- Accessing the Preferences Panel, on page 41



*To learn about the different preferences available, refer to the following chapters:*

- Starting Your Project, on page 19
- Drawing and Design, on page 67
- Importing Artwork, on page 141
- Adding Colours, on page 105
- Layers and Timing, on page 175
- Animating a Puppet, on page 291
- Scene Setup, on page 347

## Preference Highlights

You can set over 40 preferences in the Preferences panel. You will learn about them as you read through this guide.

The Preferences panel is divided into the following tabbed sections:

- General
- Shortcuts
- Interface
- Light Table
- Display
- Sceneplanning



*Some preferences require you to exit and restart the application or to close a view and reopen it.*

## Accessing the Preferences Panel

**To access the Preferences panel:**

1. In the top menu, select **Edit > Preferences** (Windows) or **Toon Boom Studio 7.1 > Preferences** (Mac OS X).

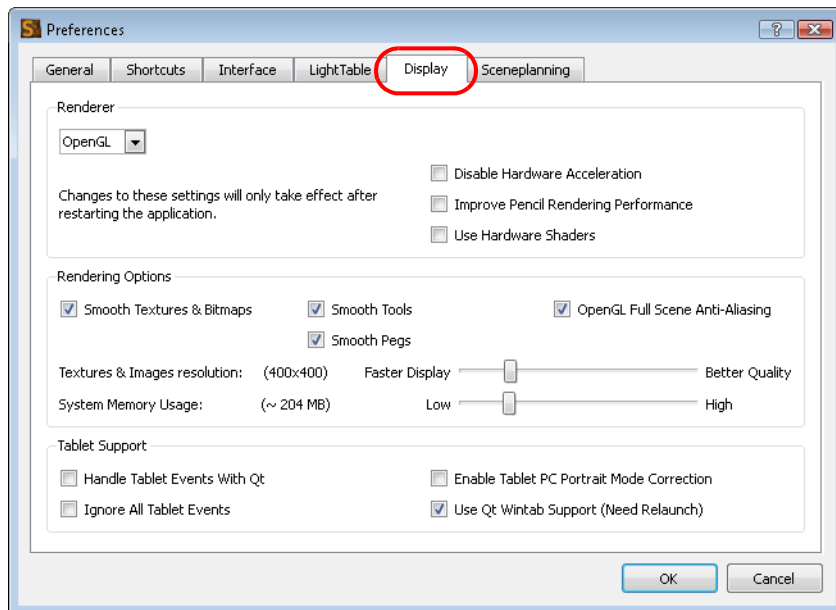
## Display

You can optimize the display performance of the software, by using the preferences available to you. Optimization of the display performance is dependant on the task you are doing and your graphic card and system. These preferences can be found via the Preferences panel.

**To open the Preferences panel:**

- ▶ Windows: Select **Edit > Preferences**.
- ▶ Mac OS X: Select **Toon Boom Studio 7.1 > Preferences**.

You can find the display performance preferences under the Display tab.



## Renderers

- **OpenGL:** By default, Toon Boom Studio uses OpenGL for rendering images in the Camera and Drawing views, but you can change this preference to use Direct3D (Windows).
- **Disable Hardware Acceleration:** Select this option if you are having problems with your display and you suspect they may be related to your video card features. This preference is only available in Windows.
- **Improve Pencil Rendering Performance:** Select this option if you are having problems with centreline strokes slowing down the software.
- **Use Hardware Shaders:** Disable this option if you experience display issues that might be caused by the graphic card.



Note that you need to restart the application in order for the Renderers settings to take effect.

## Rendering Options

- **Smooth Textures & Bitmaps:** Improves bitmap image quality by smoothing-out the pixels of bitmap images when zooming in.
- **Smooth Tools:** This option is enabled by default, it increases the display quality of tools. Disabling it will lower the display quality but increase the display speed.
- **Smooth Pegs:** This option increases the display quality of pegs and is enabled by default. Disabling it will lower the display quality of the peg but increase the display speed.
- **OpenGL Full Scene Anti-Aliasing:** Full Scene antialiasing is generated by your computer's graphic card. This antialiasing will not only antialias your drawings but all your different views in the interface. You can turn the Full Scene Antialiasing preference on and off. Full Scene Antialiasing parameters are only valid while you work in your scene. The scene will be rendered out to 100% of its resolution regardless of your settings in the Preferences or graphic card panel.
- **Texture & Images resolution:** You can change the bitmap quality of your images while working on your project in the Drawing or Camera views. This helps lower the memory usage while working, but does not affect the final render quality of your project. Depending on whether you want a faster display or better quality, you should drag the slider to the left or to the right.
- **System Memory Usage:** You can change the amount of system memory allocated to bitmap files included in your animation project. This does not affect the quality of your work. Depending on whether you want the system to use more or less memory for bitmap material, you should drag the slider to the left or to the right.

## Tablet Support

These options are used to fix issues you may have using a tablet and are very technical.

- **Handle Tablet Events With Qt:** This option changes the way the events are treated within the system and this might be needed to allow the drawing functionality of a tablet that is not a Wacom tablet. This preference is only used with Mac OS X.
- **Ignore All Tablet Events:** This option is used to deactivate all events from a tablet that is not a Wacom tablet. This will allow the tablet to work as a mouse. It will deactivate the pressure sensitivity but allow drawing just like a mouse.
- **Enable Tablet PC Portrait Mode Correction:** This preference is used to fix a past issue with a Wacom Tablet PC driver. When in portrait mode, the cursor would not correctly follow the pen movement. This preference is only available using Windows and a Tablet PC.
- **Use Qt Wintab Support (Need Relaunch):** This preference is used to fix other possible issue with a Tablet PC by changing the protocol used to manage the tablet events. This preference is only available using Windows and a Tablet PC.

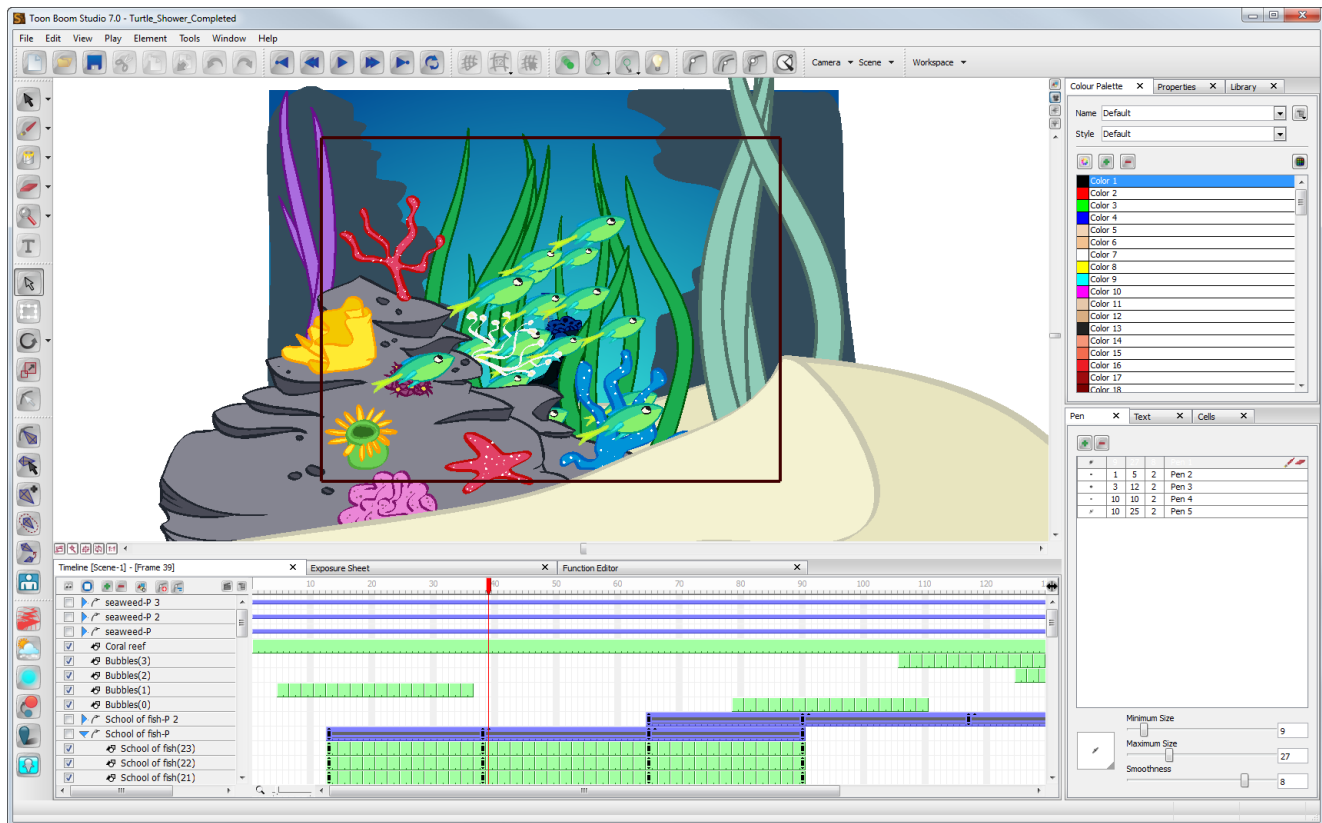
## What's Next?

So far, you have learned about:

- Launching Toon Boom Studio
- Using the Welcome Screen
- Creating and Opening Projects
- Setting Authors and Copyright Owners
- Setting the Global Library's Location
- Some Animation Basics
- Planning Your Project
- Creating Scenes in a Project
- Help Tools
- Preferences

It is now time to learn about Studio's user interface (UI). Knowing about the UI will let you work easily as you create content for your project.

# Chapter 3 Discovering the Interface



Toon Boom Studio has a very user friendly interface, easy to manage and understand. In this chapter, you will discover the main interface's highlights and how to organize your workspace.

This chapter is divided as follows:

- Interface Components, on page 46
- Interface Highlights, on page 49
- Managing Views, on page 55
- Managing Toolbars, on page 59
- Workspaces, on page 60
- Interface Navigation, on page 62
- Preferences, on page 63
- What's Next?, on page 65

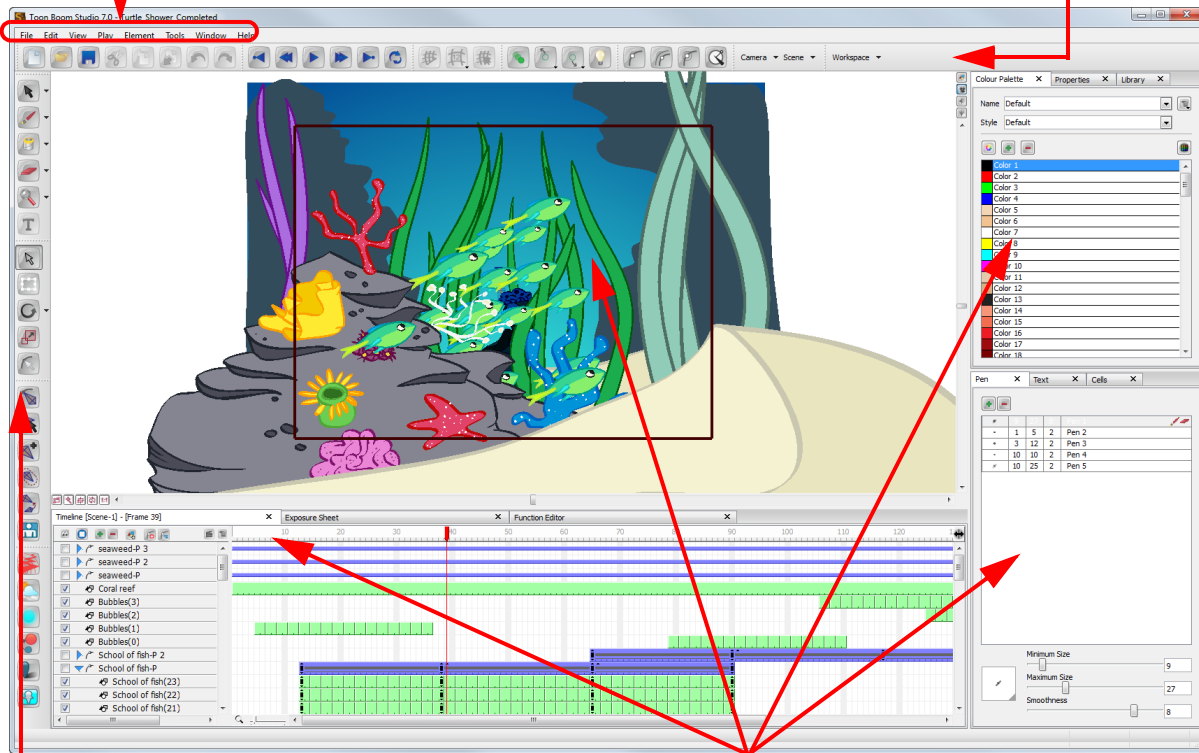
# Interface Components

Toon Boom Studio's user interface has three main components that you will use all the time while creating your animation:

- Menus, on page 47
- Toolbars, on page 48
- Views, on page 48

Menu

Toolbars



Toolbars

Views



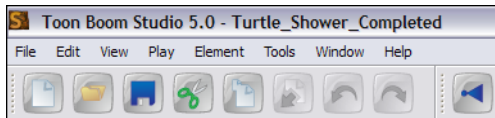
## Menus

Toon Boom Studio has two kinds of menus:

- Top Menu, on page 47
- Quick Access Menu, on page 47

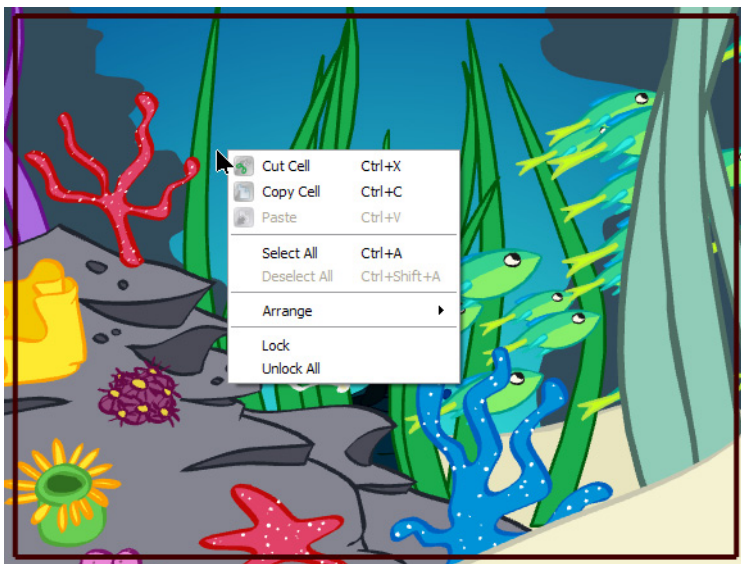
### Top Menu

The top menu is always located at the top left corner of the interface. On Windows, it is part of the user interface and on Mac OS X, it is located at the very top of the screen.



In the top menu, you will find most of the commands you will use throughout your whole project.

### Quick Access Menu



The Quick Access menu is a contextual menu containing only the commands relative to the view and area in which you are working. Instead of going all the way to the top menu, just right-click (Windows) or [Ctrl]+click (Mac OS X) in the view in which you are working to display it.

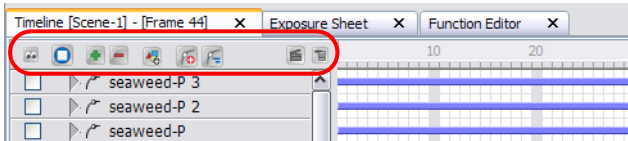
You will find a series of Quick Access menus throughout the interface. Here is a list of the main ones:

- Camera View
- Drawing View
- Timeline Layers (Timeline's left side)
- Timeline Frame (Timeline's right side)
- Xsheet Column Header
- Xsheet Column Cells
- Colour Palette View
- Library Folders (Library's left side)
- Library Templates (Library's right side)

## Toolbars



Instead of selecting a command in a menu, you can click on the buttons in the toolbars. You will mainly find toolbars at the top and left side of the interface, but also within certain views such as the Timeline view.



It may be more visual and easier to find a feature if you browse through the different toolbars.

The main toolbars you will encounter in the software are:

- Main Toolbar
- Drawing Tools Toolbar
- Sceneplanning Tools Toolbar
- Bone Tools Toolbar
- Effects Toolbar
- Interactive Playback Toolbar
- Grid Control Toolbar
- Onion Skin Toolbar
- Peg Toolbar
- Scene View Toolbar
- Workspace Toolbar
- Exposure Sheet Toolbar
- Timeline View Toolbar

## Views

Toon Boom Studio's interface is composed of several different views that you will use to perform different actions. The main view you will use for your project is the Camera view assisted by the Timeline view.

Each view specializes in one or two aspects of the production. For example, the Camera view is used for motion path animation and scene setup. The Drawing view is used for drawing and the Timeline view for setting timing and creating simple effects.

Here are the different views available in the software:

- Camera View
- Cell View
- Colour Palette View
- Drawing View
- Exposure Sheet View
- Function View
- Library View
- Pen View
- Properties View
- Scene Manager View
- Side View
- Text View
- Timeline View
- Top View

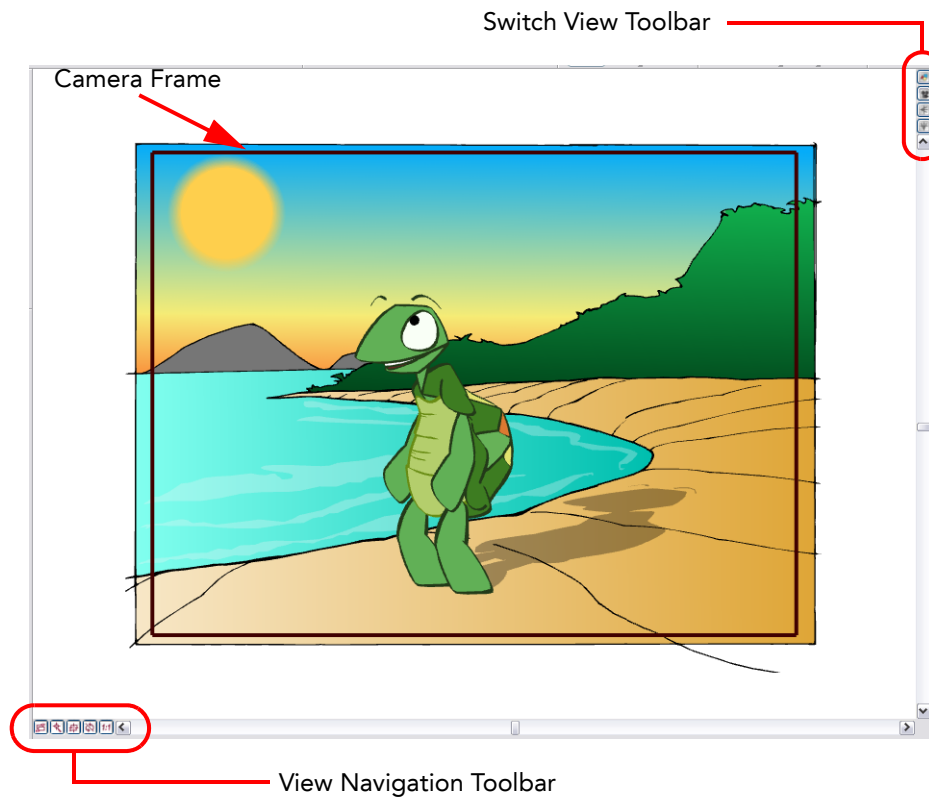
## Interface Highlights

In Toon Boom Studio, you will find several different views and toolbars. In this section, you will learn about the main ones that you will use frequently. All others are described in context in other chapters.

In this topic, you will learn about the followings:

- Camera View, on page 49
- Drawing Tools Toolbar, on page 51
- Sceneplanning Tools Toolbar, on page 51
- Timeline View, on page 52
- Interactive Playback Toolbar and Play Menu, on page 53

### Camera View








The Camera view is the main view you will use to create your artwork and animate it. In the Camera view, you will find the camera frame in which you have to position your elements if you want them to be part of your final movie. Anything outside the camera frame will not appear in your final export.

In the Camera view, you will also find two toolbars:

- View Navigation Toolbar, on page 50
- Switch View Toolbar, on page 50





## View Navigation Toolbar

In the View Navigation toolbar, you will find five buttons allowing you to zoom, pan and rotate the Camera view.

-  **Switch Between Two Views**  
Click on this button to toggle between the two last zoom levels you used. For example, if you zoom in very close on a drawing and then zoom out to a global view, clicking on this button will toggle between the close up and the global zoom levels.  
The default keyboard shortcut is [B].
-  **Reset Zooming and Panning**  
Click on this button to reset any zoom, rotation and pan action you did while navigating in the Camera view working area. The camera frame will be recentred in the Camera view. Note that it does not reset the positioning you may have done on your drawings and images.  
The default keyboard shortcut is [Shift]+[V].
-  **Recentre the Active View**  
Click on this button to centre the camera frame in the Camera view. Any rotation or zoom action will remain the same.  
The default keyboard shortcut is [Shift]+[Space].
-  **Reset the Rotation of the Window**  
Click on this button to reset any rotation you did on the Camera view working area. The pan and zoom levels will remain the same. Note that it does not reset the positioning you may have done on your drawings and images.  
The default keyboard shortcut is [Shift]+[C].
-  **Reset the Zoom Level of the Window**  
Click on this button to reset any zoom action you did on the Camera view working area. The pan and rotation will remain the same. Note that it does not reset the positioning you may have done on your drawings and images.  
The default keyboard shortcut is [Shift]+[Z].

## Switch View Toolbar

In the Switch View toolbar, you will find four buttons allowing you to toggle between the following views:

-  Drawing View
-  Camera View
-  Side View
-  Top View

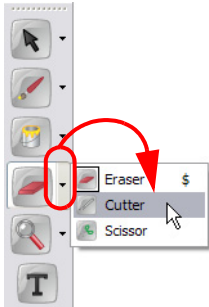
This toolbar is useful when switching between these views to save room in your workspace. You can also have these views separately by selecting them in the top Window menu.

## Drawing Tools Toolbar



The Drawing Tools toolbar contains all of the different tools you will need to draw and design your artwork. Some extra commands can be found in the top Tools menu.

Some of the buttons in the toolbar have a black drop-down arrow, this lets you open a menu with extra drawing tools.



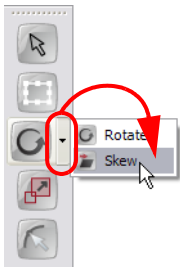
Refer to the *Drawing and Design* chapter to learn more about the drawing tools.

## Sceneplanning Tools Toolbar



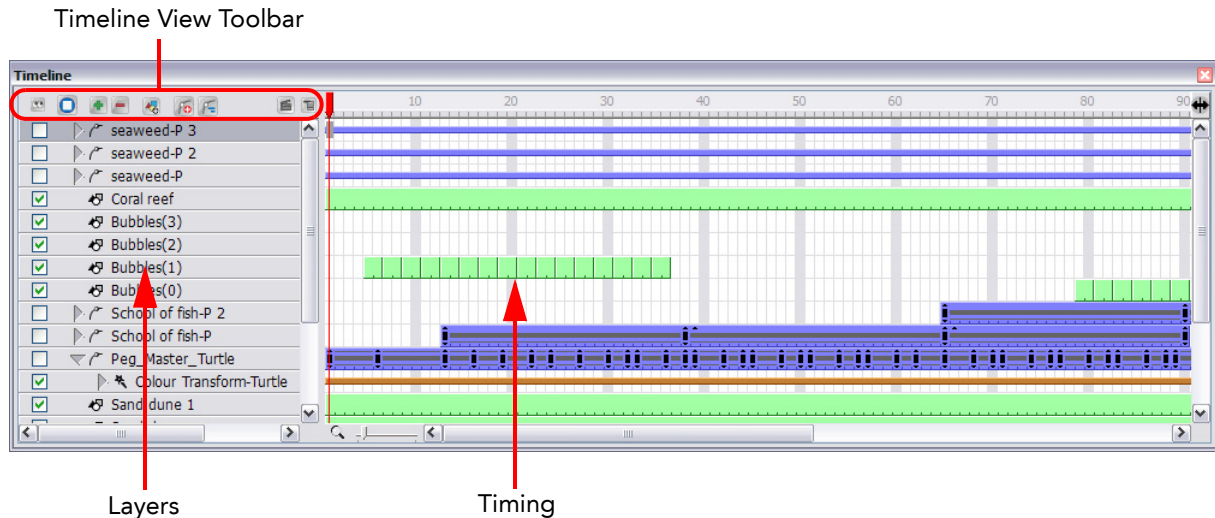
The Sceneplanning Tools toolbar contains all of the different tools you will need to position and animate your layers. Some extra command can be found in the top Element menu.

Some of the buttons in the toolbar have a black drop-down arrow, this lets you open a menu with extra sceneplanning tools.



Refer to the *Scene Setup* chapter to learn more about the sceneplanning tools.

## Timeline View










The Timeline view is the main view used to create layers, set your timing and create simple effects.





The Timeline view is divided in three sections:

- Timeline View Toolbar
- Layers Section
- Timing Section

### Timeline View Toolbar

The Timeline View toolbar is composed of nine different buttons allowing you to add, enable and disable layers as well as switching between the different scenes of a same project.








-  **Show/Hide All**  
Click on this button to show or hide all the layers in your timeline. This button will toggle between the two states.
-  **Solo Mode**  
Click on this button to toggle between the Solo Mode On  and Off  states. The Solo mode allows you to see only the currently selected layer as well as the layer that was selected when you enabled the Solo Mode to use it as a reference without having to disable all the other layers.
-  **Add New Elements**  
Click on this button to add a new element (layer) to your timeline. When you click on this button, the New Element dialog box opens and lets you choose which type of element you want, how many and how you want to name it.
-  **Delete Element**  
Click on this button to delete the selected layers in your timeline. Note that if you delete a layer with other layers connected to it, all the layers connected will be deleted at the same time. Also, if you only have one layer in your timeline, you will not be able to delete it. The Toon Boom Studio Timeline view must always have at least one drawing layer in it.
-  **Add Drawing Element**  
Click on this button to add a drawing layer in your timeline without having to go through the Add New Element dialog box. Simply click on the button and a new drawing layer will appear in the Timeline view. You can then double-click on the new layer to rename it.

- 
**Add Peg Element**  
 Click on this button to add a peg layer in your timeline without having to go through the Add New Element dialog box. Simply click on the button and a new peg layer will appear in the Timeline view. You can then double-click on the new layer to rename it.
- 
**Add Parent Peg**  
 Click on this button to add a peg layer in your timeline and connect it to any selected layer without having to go through the Add New Element dialog box. Simply click on the button and a new peg layer will appear in the Timeline view and the selected layer will be connected to it. You can then double-click on the new layer to rename it.
- 
**Scene Menu**  
 Click on this button to travel between the different scenes in your project.
- 
**Timeline View Contextual Menu**  
 Click on this button to display a drop-down menu containing commands related only to the Timeline view.

## Interactive Playback Toolbar and Play Menu

Use the Interactive Playback toolbar and the Play menu to play back your animation and sound.

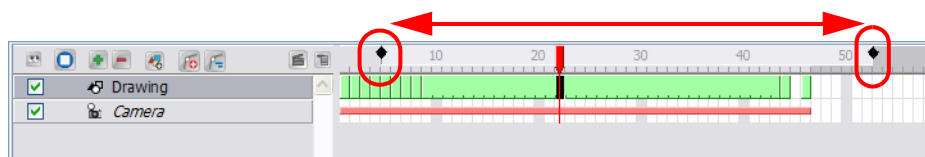
### Interactive Playback Toolbar

- Click on the Play  and Stop  buttons to play and stop the animation. You can also do this from the top menu by selecting **Play > Play** or **Stop**. The default keyboard shortcut is [P].
- Click on the Loop  button to repeat your playback indefinitely. Or do this from the top menu by selecting **Play > Loop**.
- Click on the Previous Frame  button to go to the previous frame of your animation. Or do this from the top menu by selecting **Play > Previous Frame**.
- Click on the Next Frame  button to go to the next frame of your animation. Or do this from the top menu by selecting **Play > Next Frame**.
- Click on the First Frame  button to go to the first frame of your animation. Or do this from the top menu by selecting **Play > First Frame**.
- Click on the Last Frame  button to go to the last frame of your animation. Or do this from the top menu by selecting **Play > Last Frame**.

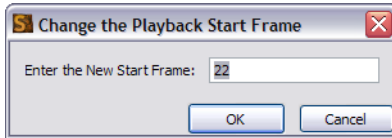
### Play Menu

Select any of the following from the top menu **Play** heading:

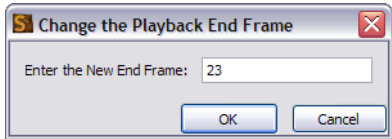
- Frame Rate:** to choose the playback speed of your animation. By default, the option is set to use the same playback speed you set in your Animation Properties when you created the project. In the drop-down menu, you can change it to 1, 2, 12, 24 or 30 frame per second.
- Force Frame Rate:** to force Toon Boom Studio to play the right playback speed. If a scene is too heavy to be played back in real time, Toon Boom Studio will drop images rather than playing back all images at a slower pace.
- Playback Range:** to specify the range of frames to be played back. By default, the option is set to Automatic Fit allowing you to play the full scene length. If you set the option to Free, black markers appear in the Timeline view. You can drag these markers to the first and last frames you want to be played back.



You can also select the **Change the Playback Start Frame** option to type the number of the first frame of the playback range.



You can also select the **Change the Playback End Frame** option to type the number of the last frame of the playback range.



- **Preview Movie:** to export a QuickTime movie of the entire animation project including all its scenes.
- **Preview Scene:** to export a QuickTime movie of your current scene, ignoring the other scenes in the project.
- **Preview Exposure Sheet:** to export a QuickTime movie of the drawings in the exposure sheet of the current scene only. This type of render ignores all the motion path and scene planning done in the Camera view.
- **Preview Exposure Sheet Selection:** to export a QuickTime movie of the selected drawings in the exposure sheet of the current scene only. This type of render ignores all the motion path and scene planning done in the Camera view.
- **Turn Off/On Sound Playback:** to enable or disable the sound while playing back the scene.
- **Turn Off/On Sound Scrubbing:** to enable or disable the sound scrubbing effect while changing frames in the Timeline view. The sound scrubbing option is mainly used to do lip-sync decoding.
- **Quick Preview:** to export a Flash SWF movie of your current scene ignoring the other scenes in the project.



## Managing Views

The Toon Boom Studio user interface is composed of different views, each one designed for a specific purpose.

This section explains how you can modify the location and accessibility of the views by adding a new view as a tab or as a window, you can also swap the view locations around.

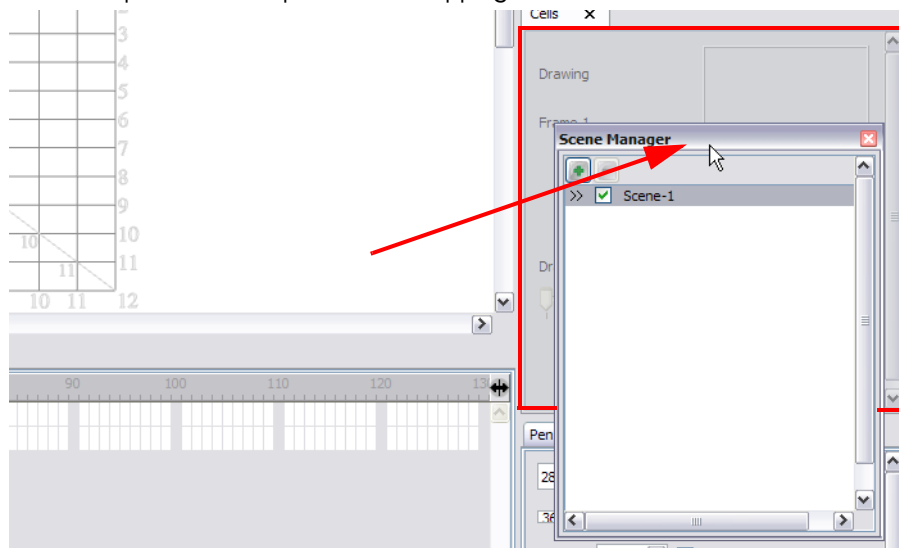
This section covers the following topics:

- Adding a New View, on page 55
- Closing a View, on page 55
- Swapping Views, on page 57
- Resizing a View, on page 58
- Showing and Hiding the Status Bar, on page 58
- Extending the Side Panel, on page 58

### Adding a New View

To add a view:

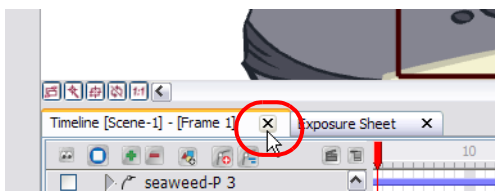
1. Select the view you want to add from **Window > The desired view**.
2. If your view appears as a floating window and you want to dock it to your workspace, drag the window's tab onto one of the workspace's views.
  - ▶ To insert your view into an existing area, wait until the zone is highlighted before dropping it.
  - ▶ To insert your window between existing views, drag your window to the border of an existing view and wait for a new space to slide open before dropping it.



### Closing a View

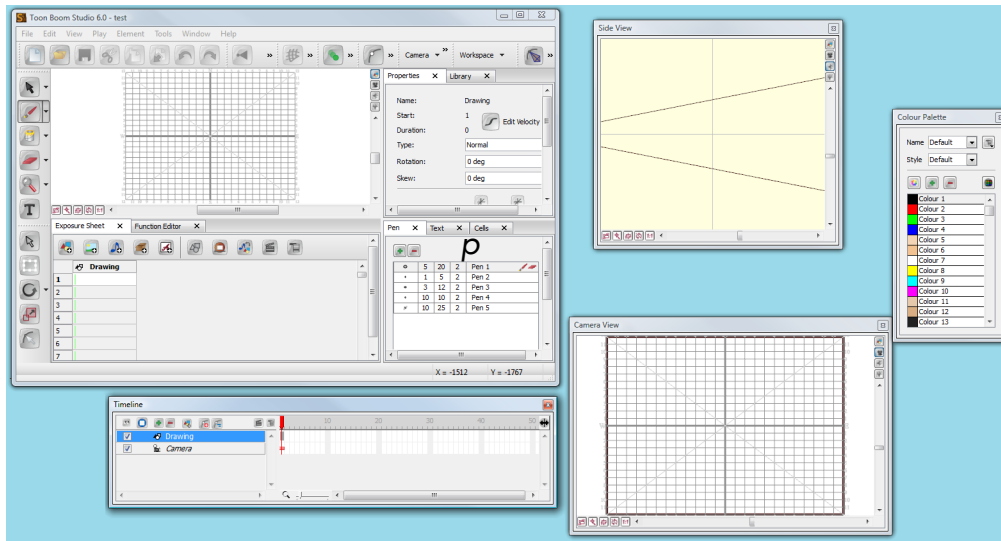
To close a view:

1. Click on the Close View button.



## Undocking and Docking Windows and Views

In Studio you can rapidly dock, undock or move windows and views around the interface and your desktop. This will make it easy for you to organise your workspace and obtain the maximum use from the available desktop real estate. In fact, if you have a dual monitor setup, you can drag it away from the Studio interface and place it on the second monitor's desktop.



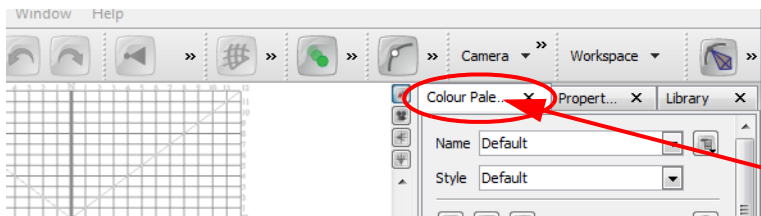
**NOTE:**

By default, all windows and views are docked into the interface. You can change this default to **floating**, by choosing Floating Windows from the drop list options in the **Edit > Preferences > Interface tab > Workspace Mode** section (Windows) and Toon Boom Studio 7.1 > Preferences > Interface tab > Workspace Mode section (Mac OS X).

### Undocking

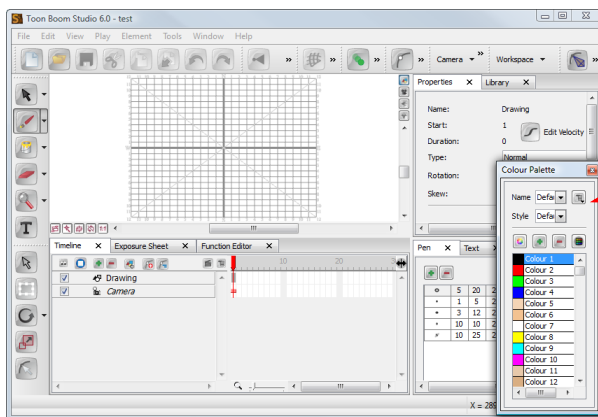
To undock a window or view from the Studio interface, do the following:

1. Double-click on the window or view's name tab.



Click on the name tab here. In this case we are going to undock the Colour Palette from the interface.

The window will automatically detach from its docked position and appear floating in the interface.



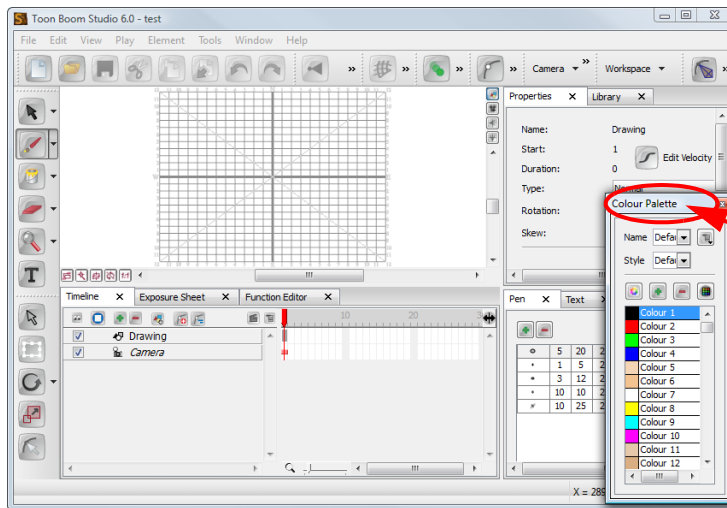
The Colour Palette window is now detached from the interface, it is floating.

2. Once you have detached the window, you can resize it to fit your work needs.

## Docking

To return the floating window to its docked location, do the following:

1. Double-click on the floating window's title bar. The window will automatically return to the docked location.



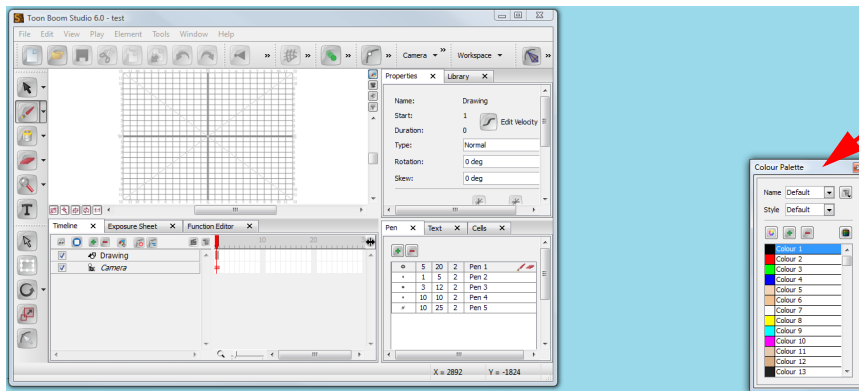
Double-click on the title bar, the window will return to its docked location.

### NOTE:

Next time you double click on that window's name tab, it will undock and return to its last location on your desktop.

## Moving the Floating Window Around the Desktop

After the window is undocked you can move it around and position it anywhere on your desktop.



Click here and drag it anywhere on your desktop.

1. Click on the window's title bar, hold the mouse button down and drag the window to the new location.

### NOTE:

Next time you double click on that window's name tab, it will undock and return to the location where you last had that floating window on your desktop.

## Swapping Views

To swap views around:

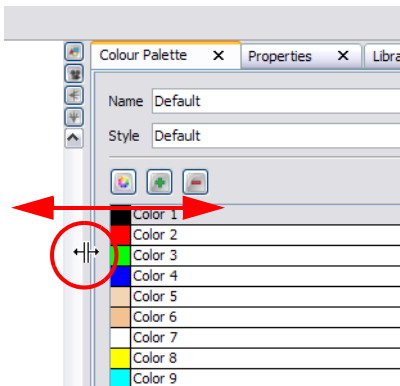
1. Select the view tab and drag it onto one of the view's separators, top area or onto another view.
2. When a darker zone appears showing an available location for the view, release the mouse button and drop the view into position.

## Resizing a View

To change the width and height of the views in the workspace, drag the side of the view.

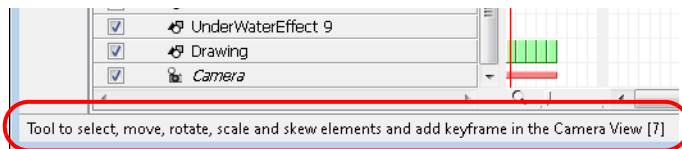
**To resize a view:**

1. In the interface, position your cursor on the edge of the view you want to resize.
2. When you see the Resizing cursor, click and drag the side of the window to the desired width or height.



## Showing and Hiding the Status Bar

Toon Boom Studio has a Status bar located at the bottom of its user interface. This displays information related to the tool or feature the mouse is passing over. You can show and hide this bar.



**To show or hide the Status bar:**

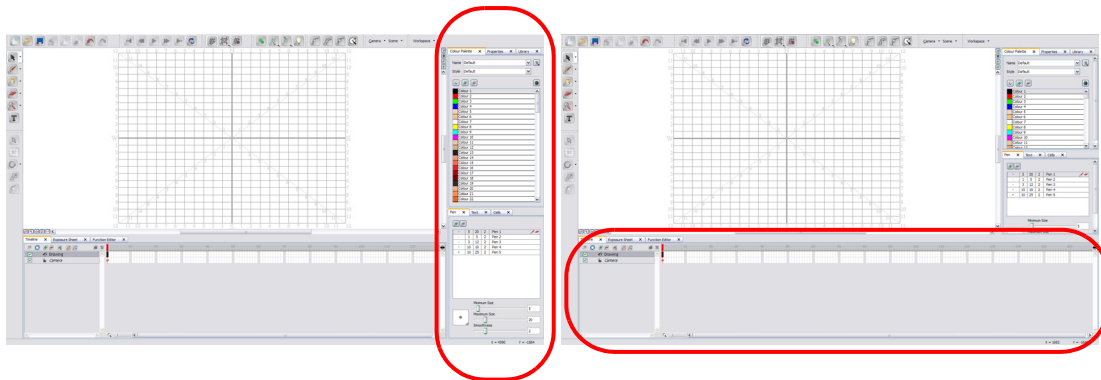
1. Select **Window > Show/Hide Status Bar**.

## Extending the Side Panel

In Toon Boom Studio's Default workspace, the utility views such as the Colour Palette and the Pen views are located to the right side of the interface. At the bottom of the workspace, there is the Timeline. Some users prefer to have their timeline taking the full width of the workspace and some other prefer to have the utility views take the full height. You can toggle between the two options using the Extend Side Panel option.

**To extend the side panel:**

1. Select **Window > Extend Side Panel**.



## Managing Toolbars

The Toon Boom Studio user interface contains toolbars which, by default, are located at the top or side of the interface. You can reposition the toolbars to suit your work style or hide unused ones.

This section covers the following topics:

- Showing or Hiding Toolbars, on page 59
- Moving Toolbars, on page 59
- Customizing Toolbars on Mac OS X, on page 59


### Showing or Hiding Toolbars

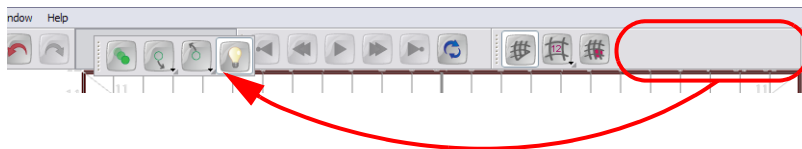
To show or hide a toolbar:

1. Select **Window > Toolbar > the desired toolbar**.

### Moving Toolbars

To move a toolbar:

1. Select the toolbar you want to move by clicking on its anchor point  and dragging it to another position in the top or side interface toolbar area.
2. When a rectangle outline appears showing an available location for the toolbar, release the mouse button and drop the toolbar into position.



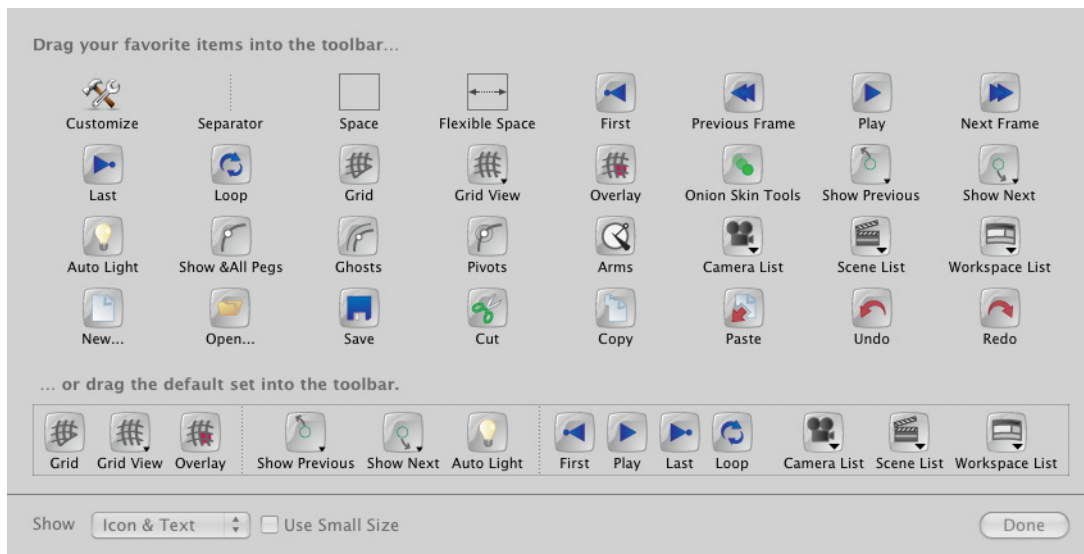
### Customizing Toolbars on Mac OS X

On Mac OS X, you can customize toolbars to display buttons that access the commands that you use the most.

To customize toolbars in Mac OS X:

1. Select **View > Customize Toolbar**.

A window opens displaying all of the buttons available for the view you are currently working in.



2. Drag the buttons you want to the toolbar in the current view.

3. You can also use the Show drop-down list and decide to show:
  - **Icon and Text**
  - **Icon Only**
  - **Text Only**
4. By default, the software displays large buttons, you can enable the Use Small Icon options to switch to smaller buttons.
5. Click on Done when you are finished making your changes.
6. To remove buttons, drag them away from the toolbar.

## Workspaces

Toon Boom Studio's user interface is composed of several views. You can customize your workspace to suit your working preferences, then save it as a new workspace and load it from the Window menu.

This section covers the following topics:

- Loading a Workspace, on page 60
- Creating a Workspace, on page 60
- Renaming a Workspace, on page 61
- Saving a Workspace, on page 61
- Deleting a Workspace, on page 61

### Loading a Workspace

The first time you open Toon Boom Studio, the default workspace is loaded. Other available workspaces are; the Drawing, Full Screen Drawing and the Scene Planning workspaces, these display different views and toolbars. You can access these workspaces and the ones you created from the Window menu.

To load a workspace:

1. In the top menu, select **Window > Workspaces > New Workspace** and select a workspace from the list. You can also select the same option in the Workspace toolbar.



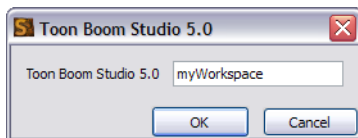
*There are several useful workspaces available in the list. One of them, the Full Screen Drawing is automatically set to Full Screen to allow a larger drawing space, to exit the Full Screen mode, select **View > Turn Off Full Screen** or use the default keyboard shortcut [Ctrl]+[F] (Windows) or [⌘]+[F] (Mac OS X).*

### Creating a Workspace

To create a workspace:

1. Reposition the views and toolbars the way you want them to be in your new workspace.
2. Select **Window > Workspaces > New Workspace**. You can also select the same option in the Workspace toolbar.

The workspace dialog box opens.



3. Rename your new workspace.
4. Click on the OK button.

The new workspace is created and can be loaded from the **Window > Workspaces** menu.

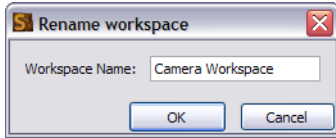
## Renaming a Workspace

You can only rename a custom workspace. You cannot rename workspaces provided with Toon Boom Studio.

**To rename a workspace:**

1. Select **Window > Workspaces >** and select the workspace you want to rename. You can also select the same option in the Workspace toolbar.
2. Select **Window > Workspaces > Rename "current workspace's name"**. You can also select the same option in the Workspace toolbar.

The **Rename Workspace** dialog box opens.



3. Rename the workspace.
4. Click on the OK button.

## Saving a Workspace

You cannot save modifications in the Default workspace. You can save modification in the Drawing, Full Screen Drawing and Scene Planning workspaces.

**To save a workspace:**

1. Select **Window > Workspaces > Save "current workspace's name"**. You can also select the same option in the Workspace toolbar.

## Deleting a Workspace

You can only delete a custom workspace. You cannot delete workspaces provided with Toon Boom Studio.

**To delete a workspace:**

1. Select **Window > Workspaces > Delete "current workspace's name"**. You can also select the same option in the Workspace toolbar.

## Restoring the Default Workspaces

You can restore modified workspaces to their default layout if you saved the modifications.

**To restore the default workspaces:**

1. Select **Window > Workspaces > Restore "current workspace's name"**. You can also select the same option in the Workspace toolbar.

## Interface Navigation

Toon Boom Studio supports Zoom In, Zoom Out, Rotate, Pan and Reset View Position for easy interface navigation.

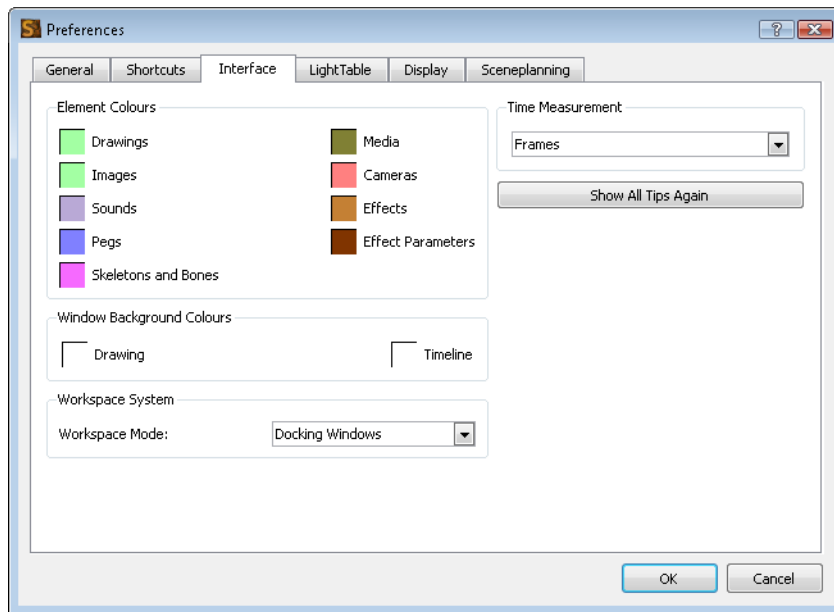
- **Zoom In:** Zooms into the view. Use the keyboard shortcut [X] or from the top menu, select **View > Zoom In**.
- **Zoom Out:** Zooms out of the view. Use the keyboard shortcut [Z] or from the top menu, select **View > Zoom Out**.
- **To Pan the view:** Hold down the keyboard shortcut [Spacebar] and drag your mouse in the direction you want to pan the view.
- **To Rotate Clockwise:** Use the keyboard shortcut [V] or for the top menu select **View > Rotate Clockwise**.
- **To Rotate Counter Clockwise:** Use the keyboard shortcut [C] or for the top menu select **View > Rotate Counter Clockwise**.
- **To Recentre the view:** Click on the keyboard shortcut [Shift] + [Spacebar] or from the top menu, select **View > Recentre**.
- **Reset View:** Resets the view to its default position. Use the keyboard shortcut [Shift]+[V] or from the top menu, select **View > Reset View**.
- **Reset Rotation:** Resets the view's rotation to its default position. Use the keyboard shortcut [Shift]+[C] or from the top menu, select **View > Reset Rotation**.
- **Reset Zoom:** Resets the view's zoom to its default position. Use the keyboard shortcut [Shift]+[Z] or from the top menu, select **View > Reset Zoom**.
- **Turn On/Off Full Screen:** Enlarges the selected view to full screen, keeping the side panel. Use the keyboard shortcut [Ctrl]+[F] (Windows) or [⌘]+[F] (Mac OS X) or from the top menu, select **View > Turn On/Off Full Screen**.



# Preferences

## Interface Preferences

To customize your interface, you will use some of the preferences located in the Interface category.



### Element Colours

Double-click on the colour swatches to modify the colour of the different elements listed in the section. For example, change the colour of the Camera option to modify the colour of the Camera in the Timeline view.

### Window Background Colours

Double-click on the Drawing or Timeline colour swatch to modify the colour of the background in the Drawing or Timeline view. If you do not like to have white as a background colour and would prefer to use a grey colour, change the colour swatch to grey.

### Workspace System

In the Workspace Mode drop-down menu, select one of the following option:

- **Docking Windows:** Select this option if you want the new views you add from the Window menu to automatically be docked to your interface.
- **Floating Windows:** Select this option if you want the new views you add from the Window menu to be added as floating windows and not be docked to your interface.

### Show All Tips Again

Toon Boom Studio prompts the user to inform about certain situations. Often the user can select the Do Not Show This Message Again option to avoid getting message prompts.

If you want to see these messages, click on the Show All Tips Again button.

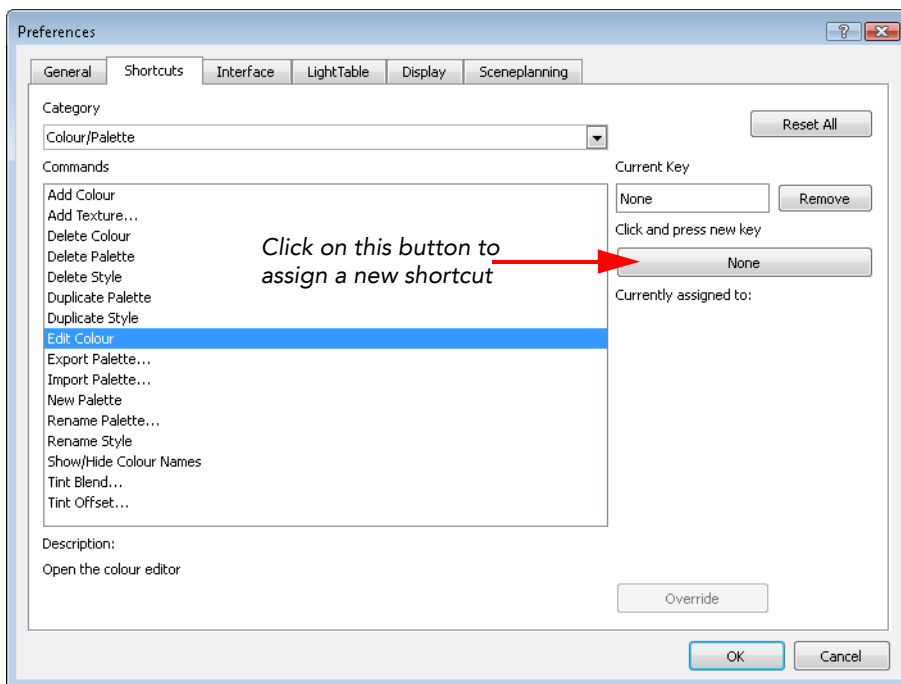
## Keyboard Shortcuts

To speed up your work, all of Toon Boom Studio's keyboard shortcuts can be customized.

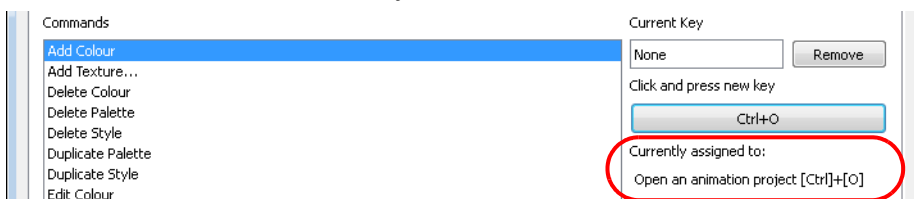
You can customize most of the shortcuts by opening the Preferences panel and going to the Shortcuts tab.

### To set a shortcut:

1. Open the Preferences panel.
2. In the Preferences panel, go to the Shortcuts tab.
3. In the Category drop-down menu, select the menu containing the command you want to modify.
4. In the left window, select the command to modify.
5. Click on the shortcut button to modify the shortcut.  
The current assigned shortcut is displayed on this button. If no shortcut is currently assigned for the selected command, the word **None** will be displayed instead.



6. On your keyboard, press on the desired key for the new shortcut.
  - ▶ To remove any keyboard shortcut associated to a command, click on the Remove button.
  - ▶ To reset all the keyboard shortcuts to their default values, click on the Reset All button.
7. If a keyboard shortcut is already in use, a message will appear in the Currently Assigned To window notifying you of the command to which it is already associated.



- ▶ Click on the Override button to ignore the previous association and assign the shortcut to the selected command. The other command's shortcut will be set to none.
  - ▶ If you click on the OK button before overriding the shortcut assignment, the action will be cancelled.
8. Click on the OK button.

## What's Next?

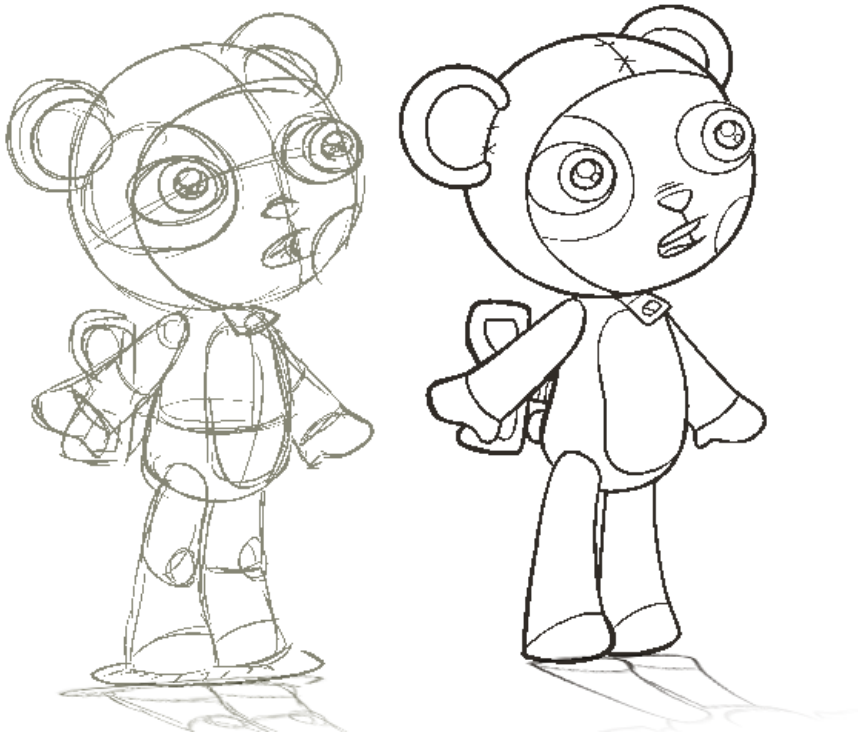
So far, you have learned about:

- Interface Highlights
- Views
- Toolbars
- Workspace
- Preferences
- Customizing Keyboard Shortcuts

It is now time to learn about Studio's wide variety of drawing and design tools.



# Chapter 4 Drawing and Design





This chapter explains the main options, features and tools you will need when drawing and designing in Studio. In this chapter, you will learn about the following:

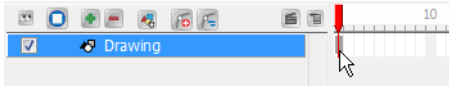
- Drawing Basics, on page 68
- Drawing in the Drawing or Camera View, on page 69
- Drawing Using the Brush or Pencil Tool, on page 70
- Relative Sizes of Characters and Props, on page 72
- Sketching, on page 74
- Tracing, on page 76
- Erasing Part of a Drawing, on page 78
- Selecting Drawing Objects, on page 79
- Pen View, on page 81
- Drawing Invisible Lines, on page 85
- Working With Text, on page 86
- More Drawing Tools, on page 89
- More Drawing Options, on page 96
- Preferences, on page 101
- What's Next?, on page 103

## Drawing Basics

As soon as Studio is launched, you can immediately start drawing using the drawing layer which is already available.

### How to Draw:

1. Click on the Drawing View  button to switch to the Drawing view. You'll find it in the top right corner of the main window.
2. In the Drawing Tools toolbar, select the Brush  tool. You can also press the [@] default keyboard shortcut.
3. In the Timeline or Xsheet view, select the first cell in the drawing layer.



4. In the Drawing view, start drawing.





Note that you can also draw directly in the Camera view without switching to the Drawing view.


## Drawing in the Drawing or Camera View

In Toon Boom Studio, you can either draw in the Drawing view or the Camera view. Although the views look similar there are some differences when it comes to drawing.

### Drawing View

By default, only the selected cell drawing is displayed in the Drawing view. You can use tools such as the Light Table , which will display the current frame drawing of all the visible layers of your scene in washed out colours, or the Onion Skin  option which displays the previous and next drawing of the currently selected drawing layer.

**To switch to the Drawing view:**

- ▶ Click on the Drawing View  button on the top right corner of the main window to switch to the Drawing view.




Refer to the *More Drawing Tools* topic to learn more about the *Light Table* option.

### Camera View

By default, all the visible layers drawing of the selected frame will be displayed in the Camera view. The selected drawing will automatically be displayed on top when you are using a Drawing tool to facilitate the edition of the

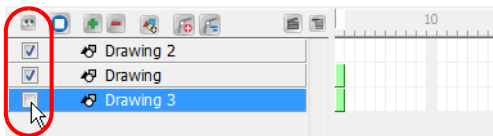
drawing. You can also use the Onion Skin  option to display previous and next drawings of the selected drawing layer.

**To switch to the Camera view:**

- ▶ Press on the Camera View  button to switch to the Camera view. You'll find it in the top right corner of the main window.


**To hide and show layers in the Timeline view:**

1. In the Timeline view, click in the checkbox corresponding to the layer you want to hide.



- ▶  An enabled checkbox means that the layer is visible
- ▶  A disabled checkbox means that the layer is hidden.

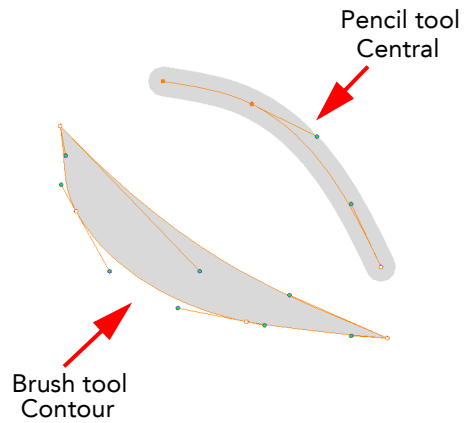
**To show or hide all layers at once in the Timeline view:**


1. In the Timeline view, click on the Show/Hide All  button.



Refer to the *Traditional Digital Animation* chapter to learn more about the *Onion Skin* feature.

## Drawing Using the Brush or Pencil Tool



The Brush  and Pencil  tools are used to draw and sketch with.

### Brush Tool


The Brush tool takes account of pressure sensitivity, allowing you to create lines with variable thicknesses when using a pen tablet, creating a contour vector shape.

You can set different parameters, such as the size and smoothness of the Brush tool in the Pen view.



*Refer to the Pen View topic to learn more about setting the Brush tool parameters.*

**To select the Brush tool:**

- ▶ In the Drawing Tools toolbar, select the Brush  tool.
- ▶ In the top menu, select **Tools > Drawing Tools > Brush**.
- ▶ Press [@], the default keyboard shortcut.

### Pencil Tool


The Pencil , Polyline  and Shape    tools create a central vector line of uniform thickness.

You can set different parameters, such as the size and smoothness of the Pencil tool in the Pen view.



*Refer to the Pen View topic to learn more about setting the Pencil tool parameters.*

**To select the Pencil tool:**

- ▶ In the Drawing Tools toolbar, select the Pencil  tool.
- ▶ In the top menu, select **Tools > Drawing Tools > Pencil**.
- ▶ Press the keyboard shortcut [2], to cycle through tools.





## Converting Lines


You can easily convert your pencil lines to brush shapes and your brush shapes to pencil lines using these features:



- Convert Lines to Brush
- Extract Centre Line

### Convert Lines to Brush

You can draw with a Pencil  tool and then convert it to a Brush line using the Convert Lines to Brush option, and then you can modify its thickness using the Contour Editor  tool.

**To convert a pencil line to a brush zone:**

1. Select the Select  tool from the Drawing Tools toolbar.  
You can also select **Tools > Drawing Tools > Select** from the top menu or use the [!] default keyboard shortcut.
2. In the Drawing or Camera view, select the pencil line to convert and select **Tools > Convert Lines to Brush** from the top menu.


 Refer to the *More Drawing Tools* topic to learn more about the Contour Editor  tool.

### Extract Centre Line - Converting a Brush shape to a Pencil line

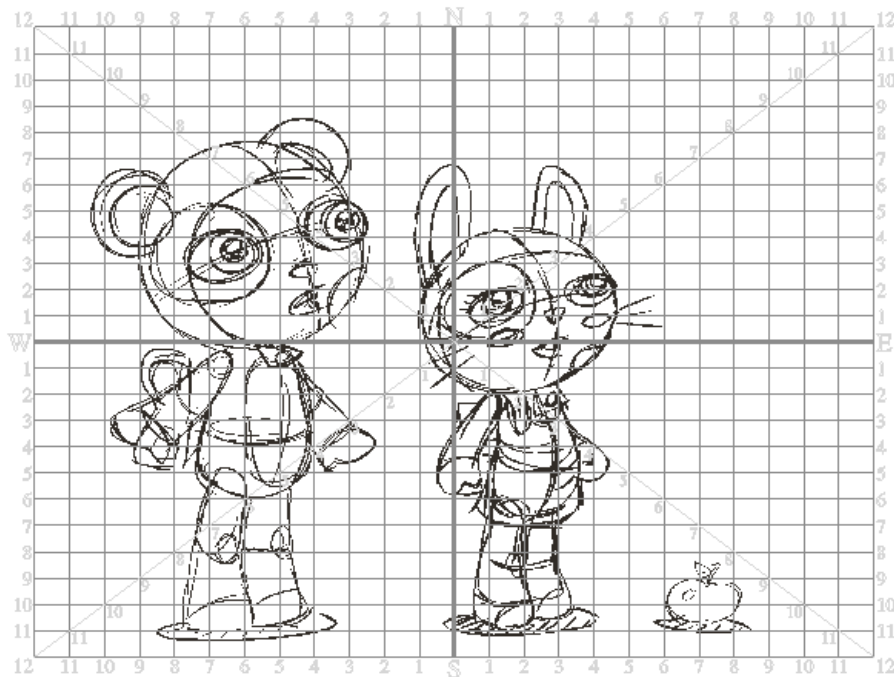
You can also convert a brush shape into a pencil line using the Extract Centre Line option.

**NOTE:** The brush line loses its thick and thin characteristics when is converted from a contour vector to a central vector type.

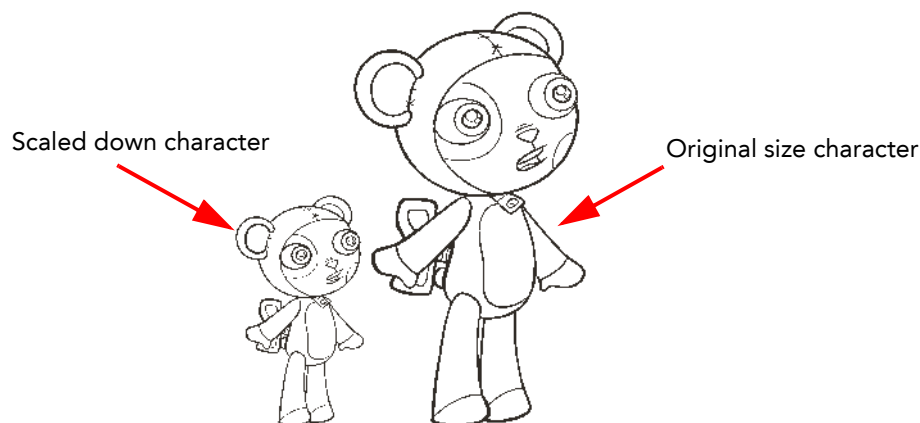
**To convert a brush zone to a pencil line:**

1. Select the Select  tool from the Drawing Tools toolbar.  
You can also select **Tools > Drawing Tools > Select** from the top menu or use the [!] default keyboard shortcut.
2. In the Drawing or Camera view, select the brush zone you want to convert and select **Tools > Extract Centre Line** from the top menu.

## Relative Sizes of Characters and Props



Your project can contain many characters and props. When characters are placed together in a scene you will notice that they may be of various sizes, some will be too tall or too small, the character's size may vary from one scene to the next. You may also find that when a character is scaled down using the Scene Planning tools, its outline is thinner. Sometimes, the outline may be so thin that the difference between the resized character's outline and the outline of one which was not resized is quite noticeable.






When you design characters or props keep in mind how they will look together. The grid can be displayed in the Camera or the Drawing view. This is useful when determining the proportions between characters and props in your scene.

**To display the Grid when working in either the Camera or the Drawing view:**



- ▶ Click on the Show Grid  button in the Grid Control toolbar. You can also select **View > Grid > Show Grid** from the top menu.

**To select the Grid units when working in either the Camera or the Drawing view:**

- ▶ With the grid showing, click and hold the grid unit button in the Grid Control toolbar to display the other grid unit options and choose from the following:
  - ⇒  **Normal**: Sets the grid units to squares. You can also select **View > Grid > Normal** from the top menu.
  - ⇒  **12 Field**: Sets the grid units to rectangles forming a 12 field grid. You can also select **View > Grid > 12 Field** from the top menu.
  - ⇒  **16 Field**: Sets the grid units to rectangles forming a 16 field grid. You can also select **View > Grid > 16 Field** from the top menu.

By default, the grid is displayed as an underlay so that it appears behind the drawings. If you prefer it to appear in front of the drawings, change this option to display it as an overlay.

**To display the Grid as an overlay:**

1. In the Grid Control toolbar, click on the Overlay  button. When the button is pushed in, the grid will be displayed as an overlay. You can also select **View > Grid > Overlay** from the top menu.
2. In the Grid Control toolbar, click on the pushed-in Overlay  button to switch back to the underlay grid display mode. You can also select **View > Grid > Underlay** from the top menu.




You must be working in the Camera or Drawing view when setting the grid options, otherwise the Grid Control toolbar and the related top menu commands will be greyed out. **NOTE:** when working in the Camera view, the grid is only displayed if a Drawing tool is selected.

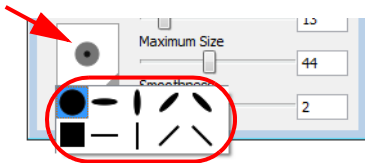
# Sketching



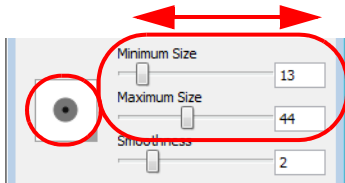
A sketch is a rough version of your design. When you sketch a rough of a new design for a character you can produce whatever you imagine without being concerned about the final look of your lines. Making a rough version of your character helps you build a solid base shape and come up with some new design ideas. Studio has many tools available for sketching.

### To make a sketch:

1. In the Drawing Tools toolbar, select the Brush  tool. You can also press the [ @ ] default keyboard shortcut.
2. In the Pen view, set the look of your Brush:
  - ▶ Click on the Brush Preview area and select the brush shape you want.

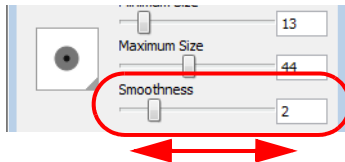


- ▶ Use the sliders to set the Minimum and Maximum brush sizes.

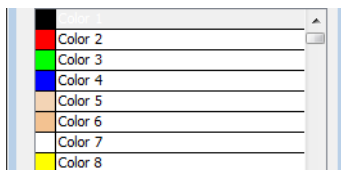


As you set your brush size, the Brush Preview area will display the Minimum size of your brush in black and the Maximum size in dark grey.

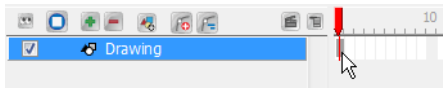
- ▶ You can also set the Smoothness value of the Brush tool. Use this option to smooth out the brush stroke after you trace it. The higher the value, the more smoothness will be applied to your line.



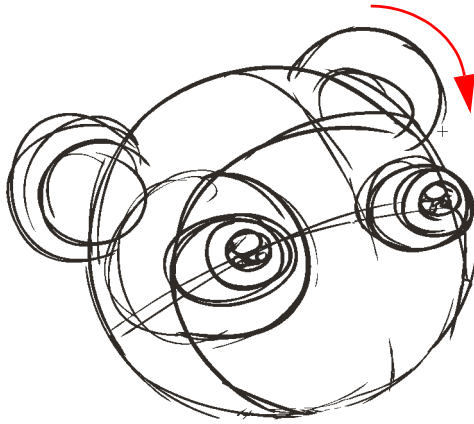
3. In the Colour view, click on a default colour swatch you want to draw with to change the colour of the Brush tool.



4. In the Timeline or Xsheet view, select the first cell of the drawing layer.



5. In the Drawing view, sketch your character.



Refer to the *Adding Colours* chapter to learn more about adding colours to your project and using the Colour view.


Refer to the *Pen View* topic to learn more about how the Pen view functions.

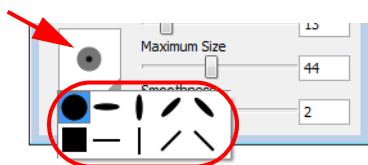
## Tracing



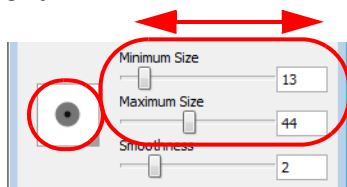
Once you have sketched a rough version of your design, the next step is to trace it. Tracing lets you determine the final look and line style of your drawing. Studio has many tools available for you to trace and perfect your drawing line.

### To trace a drawing:

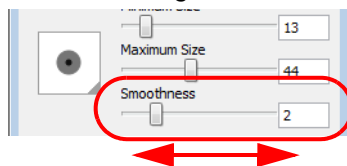
1. Open the project containing the sketch to be traced.
2. In the Drawing Tools toolbar, select the Brush  tool. You can also press the [@,] default keyboard shortcut.
3. In the Pen view, set the look of your brush:
  - ▶ Click on the Brush Preview area and select the brush shape you want.



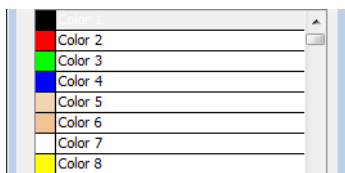
- ▶ Use the Maximum Size and Minimum Size slides to set the brush size variation. As you set your brush size, the Brush Preview area will display the minimum size of your brush in black and the maximum size in dark grey.



- ▶ You can also set the Smoothness value of the Brush tool. This option will smooth your brush stroke after you traced it. The higher the value, the more smoothness will be applied to your line.

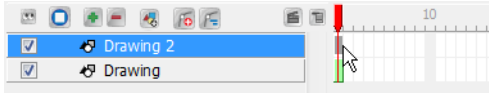



4. In the Colour view, click on a default colour swatch you want to draw with. This will change the colour of the Brush tool.



5. In the Timeline or Xsheet view, click on the Add Drawing Element  button to add a new drawing layer.

6. In the Timeline or Xsheet view, select the cell of the new drawing layer corresponding to the frame your sketch is in.



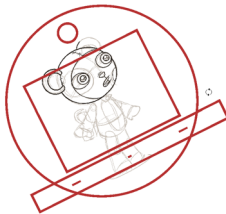
7. In the Onion Skin toolbar, click on the Auto Light Table  button to see your sketch as a reference. You can also select **View > Turn Auto Light Table On** from the top menu. The default keyboard shortcut is [L]. Your sketch drawing layer will appear washed-out in the Drawing view.



8. Sometimes it helps to hide elements, specially when having many drawing layers. You can hide elements in the Drawing View, using the Exposure Sheet view, so that you can focus on a specific layer.
- ▶ In the Exposure Sheet view, select the column containing the drawing you want to hide and select **Element > Display > Exposure Sheet > Hide** from the top menu.
  - ▶ To hide all the drawing columns except the currently selected ones, select **Element > Display > Exposure Sheet > Hide All Others** from the top menu.
  - ▶ To show again the hidden columns, select **Element > Display > Exposure Sheet > Show All Exposure Sheet Elements** from the top menu.
9. In the Drawing view, trace your character.



10. You can use the Rotary Table to rotate your workspace in the same way as you would rotate a sheet of paper you were tracing on:



- ⇒ Press and hold [Ctrl]+[Alt] (Windows) or [Ctrl]+[⌘] (Mac OS X) to display the rotary table and then click and drag inside the drawing view to rotate the workspace.
- ⇒ Select **View > Reset Rotation** or press [Shift]+[C], the default keyboard shortcut, to reset the rotation of the view.



Once you are comfortable using the Drawing tools, you can improve your line art using the Contour Editor tool.




Refer to the *Adding Colours* chapter to learn more about adding colours.

Refer to the *Pen View* topic to learn more about how the Pen view functions.


Refer to the *More Drawing Tools* topic to learn more about the Contour Editor tool.

## Erasing Part of a Drawing




The Eraser  tool is used to change part or all of your drawing. It is pressure sensitive, just like the Brush tool. Pressure sensitivity provides more precision if you have to erase parts of a drawing. Its parameters can be set in the Pen view, such as size, smoothness and eraser shape.

### To erase with the Eraser tool:

1. In the Drawing Tools toolbar, select the Eraser  tool.  
You can also select **Tools > Drawing Tools > Eraser** from the top menu.
  - ▶ The default keyboard shortcut is [E].
2. In the Drawing or Camera view, erase parts of the drawing.



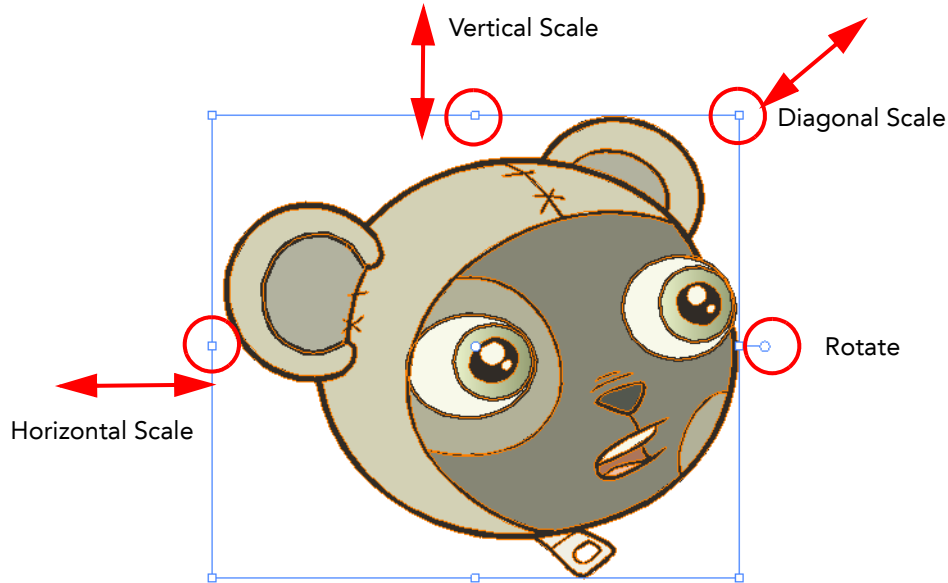
You can also delete drawing objects by selecting them with the Select  tool and pressing [Delete].




For further information on how to resize the Eraser tool, please refer to Setting Up the Brush and Eraser Tools, on page 81




## Selecting Drawing Objects



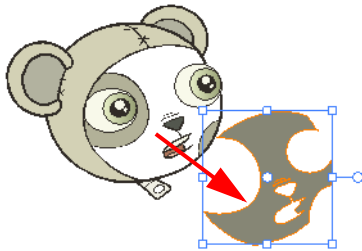
The Select  tool is used to select drawing objects in the Drawing or Camera view and to apply basic transformations such as repositioning, rotating or scaling, using the different handles of the bounding box.

**To select with the Select tool:**

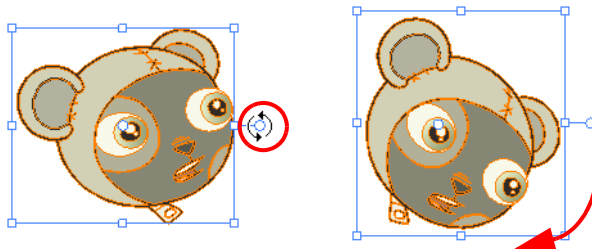
1. In the Drawing Tools toolbar, select the Select  tool, you can also use the default keyboard shortcut [I].
2. In the Drawing or Camera view, select the drawing objects.
  - ▶ You can select all the drawing objects in a drawing by using the default keyboard shortcut [Ctrl]+[A] (Windows) or [⌘]+[A] (Mac OS X).

**To deform or reposition selected drawing objects:**

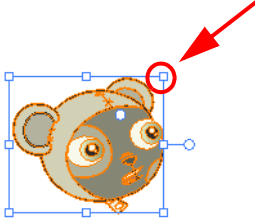
- ▶ To reposition, click on the selected drawing object and drag the selection to a new area.



- ▶ To rotate, rotate the selection box handle.

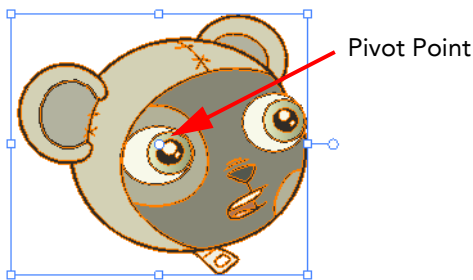



- ▶ To scale, pull or push either on the size, top or corner control point. Hold down [Shift] to lock the scaling ratio.



While working with the Select tool, you can press and hold [Ctrl] (Windows) or [Alt] (Mac OS X) to temporarily switch to the Perspective tool, allowing further transformations. Refer to the Perspective Tool description in the More Drawing Tools topic to learn more.

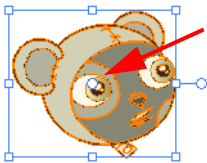
## Repositioning a Pivot Point



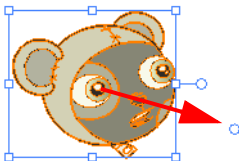
Some of the transformations such as rotation, scale and flip, are done using the position of the pivot point as the central point. By default, this pivot point is situated in the centre of your selection. You can temporarily reposition this pivot point for a transformation using the Select  tool.

### To temporarily reposition the pivot point:

1. In the Drawing or Camera view, select the drawing object you want to transform. The pivot point will appear in the middle of your selection.








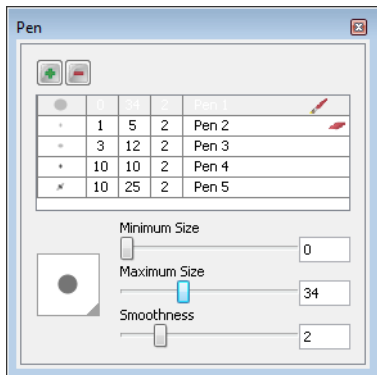
2. Click on the pivot point and drag it to a new position.





This becomes the new position of the pivot point for the current transformation and will remain there until you make a new selection.

## Pen View



The Pen view lets you customize the size, smoothness or tip shape of the Brush , Eraser , Pencil , Shapes  and Polyline  tools.

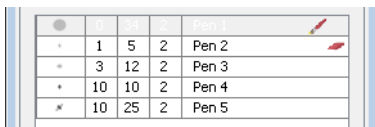


## Setting Up the Brush and Eraser Tools

The Brush  and Eraser  tools become pressure sensitive when using a pen tablet, meaning they will produce a thick and thin effect when drawing or erasing, depending on how hard you press on your pen. Therefore, unlike the Pencil tool, you can set a minimum and maximum brush size for this effect.

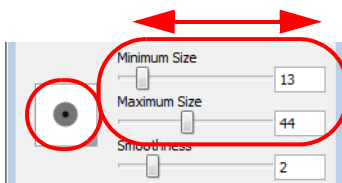
To set up the Brush or Eraser tool:

1. In the Drawing Tools toolbar, select the Brush  or Eraser  tool.
2. In the Pen view, you can select a pen style from the Pen Style list. Refer to Managing Pen Styles to learn more about Pen Styles.

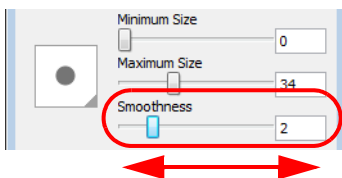


3. Use the Minimum Size and Maximum Size sliders to set the Minimum and Maximum brush sizes for the thick and thin effect.

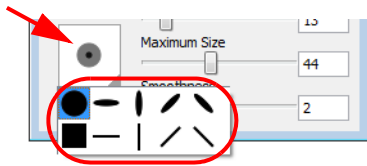
As you set your brush size, the Brush Preview area will display the Minimum size of your brush in black and the Maximum size in dark grey.





4. Use the Smoothness slider to set the smoothness value for your line. When you draw, Studio makes an adjustment to the line based on this value, it smooths out any sharp edges or jagged peaks in the line.

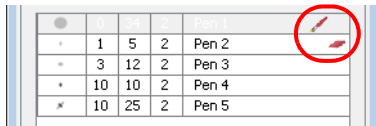


- Click on the Preview area and select a Brush tip shape from the selection of tip shapes in the pop-up menu.




## Eraser and Brush Styles

In the Pen Style list of the Pen view, there is a Brush  and Eraser  marker.




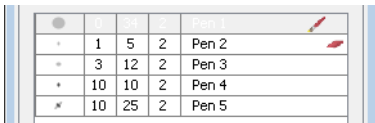
These markers show the active pen style linked to the Eraser tool, and the active pen style linked to the Brush, Pencil, Shapes and Polyline tools. When you switch from one type of tool to the other, the active pen style linked to it is automatically selected. This way you can quickly switch from the Eraser to the Drawing tool without having to change the settings in between.

## Setting Up the Pencil Tool

The Pencil  tool is not pressure sensitive and only has one value to set, unlike the Brush or Eraser tools which are pressure sensitive.

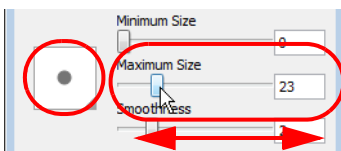
**To set up the Pencil tool:**

- In the Drawing Tools toolbar, select the Pencil  tool.
- In the Pen view, you can select a pen style from the Pen Style list. Refer to *Managing Pen Styles* to learn more about Pen Styles.

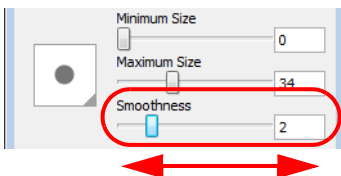


- Use the Maximum Size slider to set the Maximum brush size.

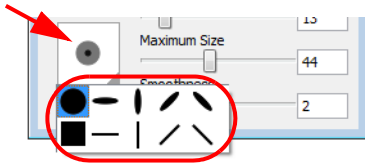
As you set your brush size, the Brush Preview area will display a preview of your pencil.



- Use the Smoothness slider to set the smoothness value for your line. When you draw, Studio makes an adjustment to the line based on this value, it smooths out any sharp edges or jagged peaks in the line.







- Click on the Preview area and select a Pencil tip shape from the pop-up shape menu.

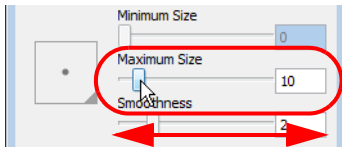


## Setting Up the Shape Tools and Polyline Tool

To customize the Shapes and Polyline tools size you only have to set one value.

**To set the shapes and Polyline tools size:**


- In the Drawing Tools toolbar, select the Line , Ellipse , Rectangle  or Polyline  tool.
- In the Pen view, use the Maximum Size slider to set the size of your tool.

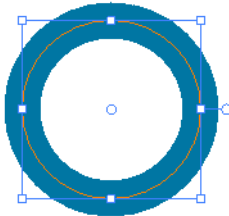


## Changing the Thickness of a Centreline Object

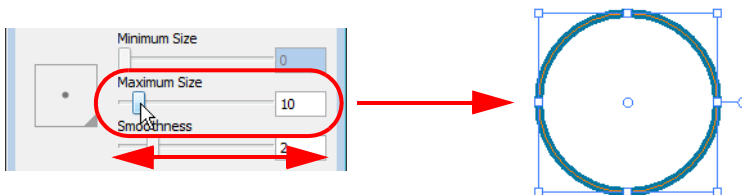
You can use the Pen view to resize the thickness of existing centreline drawing objects, such as a Pencil lines, Shapes or Polylines.

**To resize a centreline object stroke:**

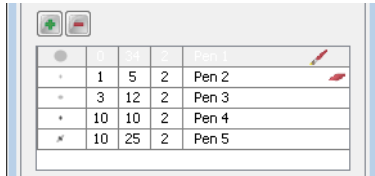
- In the Drawing Tools toolbar, select the Select  tool. You can also press the [!] default keyboard shortcut.
- In the Drawing or Camera view, select the centreline drawing object you want to change the thickness of.



- In the Pen view, use the Maximum Size slider to set the new thickness of your lines.




## Managing Pen Styles

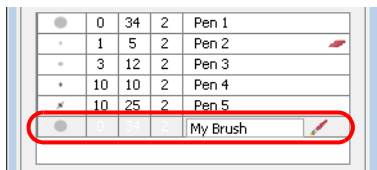


There are five default Pen Styles that you can use, each of these styles can be edited. You can also add your own custom pen styles to the Pen Style list.

### Adding a Pen Style

#### To Create a Pen Style:

1. In the Pen view, click on the Add Pen Style  button. A new Pen Style is added at the end of the pen style list, this new pen style is based on the previously selected style.
2. Double-click on your new pen style to rename it.

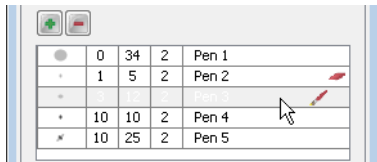


3. Set the desired values for your new pen style, such as Minimum and Maximum Sizes, Smoothness and Brush tip shape.

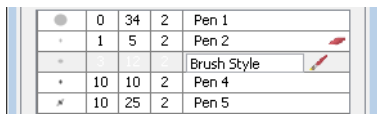
### Editing a Pen Style

#### To edit a pen style:

1. In the Pen view, select the pen style you want to edit.



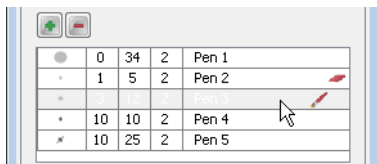
2. In the Pen Style list, you can double-click on a pen style to rename it.



3. Set the values you want for the pen style, such as Minimum or Maximum size, Smoothness and Brush tip shape.

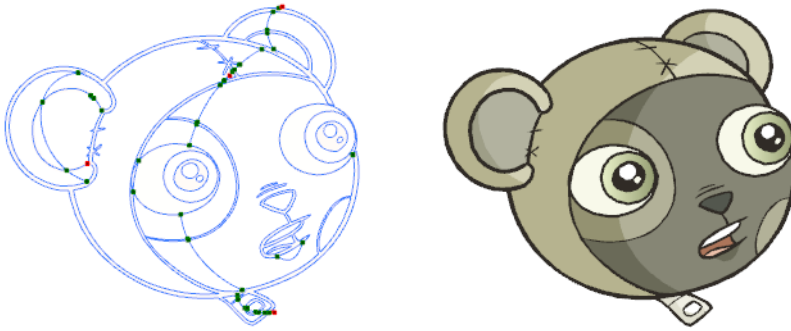
### Removing a Pen Style

1. In the Pen view, select the pen style you want to remove.




2. Click on the Remove Pen Style  button to delete it from the list.

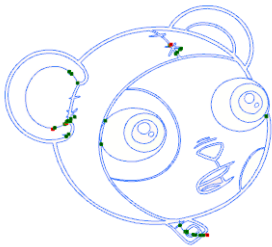
## Drawing Invisible Lines



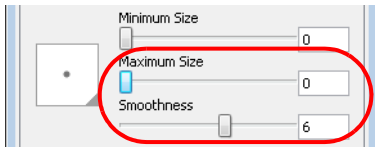
Using the Pencil tool, you can also draw as strokes only, meaning that the line will be invisible. This can be useful to draw tones and highlights directly on the character.

### To draw invisible lines with the Pencil tool:



1. In the Timeline or Exposure Sheet view, select the cell where you want to draw.
2. In the Drawing Tools toolbar, click on the Pencil  tool. You can also access the Pencil tool by going to **Tools > Drawing Tools > Pencil**. You can also use the default keyboard shortcut [2], to cycle through tools.
3. In the Top menu, select **View > Show Strokes**. The default keyboard shortcut is [K]. This makes the lines visible enabling you to see them as you draw.





4. In the Pen Style view, set the Pen tool maximum size to "0". You can also adjust the smoothness.




5. In the Camera or Drawing view, start drawing.

 You can modify the stroke shape with the Contour Editor  tool. Refer to the *More Drawing Tools* topic to learn how to use the Contour Editor tool.

 You can also draw with invisible lines using the Stroke  tool. However, you will not be able to control the smoothness value for your line.

### To select the Stroke tool:

- ⇒ In the Drawing Tools toolbar, click on the Stroke  tool. You can also access the Pencil tool by going to **Tools > Drawing Tools > Stroke**. You can also use the default keyboard shortcut [3], to cycle through tools.

## Working With Text

With the Text tool, you can type text in your project, using various fonts and text attributes. Text objects are part of a drawing, so you can manipulate them the same way.

### Creating Text

To add text to your drawings:

1. In the Drawing Tools toolbar, select the Text **T** tool. You can also select **Tools > Drawing Tools > Text** from the top menu or press the [T] default keyboard shortcut.
2. In the Timeline view, select the cell containing the drawing you want to add text to.
3. In the Drawing or Camera view, click on the location you want your text to begin.



4. You can use the Text view to select the font, font size and format the text you will type. To learn more see the next topic [Formatting the Text](#).
5. Type in the desired text.

Mechanic Bear Model

6. If you want to create another text object, click outside the currently active text box. You can always return to edit the text by selecting the Text **T** tool and clicking in the text.

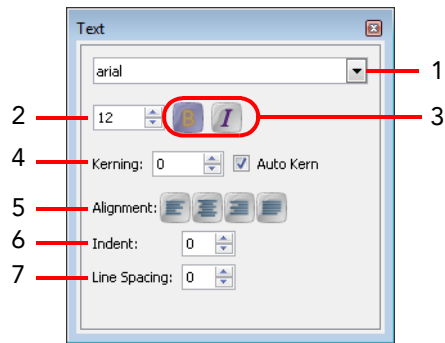
### Mechanic Bear Model





## Formatting the Text

Use the Text view to select the font type and other formatting options you want to apply to the text.



### 1. Font Type

Use this drop-down menu to select the desired font, from the list of font available in your system.

### 2. Font Size

Type the desired size for the text in this field. You can also use the up and down arrow buttons to set the desired value.

### 3. Font Style

Use these buttons to select a desired style for your text:

▶  Bold

▶  Italic

### 4. Kerning

Use the kerning field to modify the spacing between characters. You can select the **Auto Kern** option to set the kerning automatically, based on the font's predefined standard. A negative value decreases spacing between each character and a positive value increases it.

### 5. Alignment

Use these buttons to align the paragraph.

▶  Left

▶  Centred

▶  Right

▶  Justified

### 6. Indent

Enter a value in the Indent field to increase or decrease the indentation on the first line of your text. A positive value sets the first line of your paragraph farther to the right and a negative value sets it farther to the left.


### 7. Line Spacing

Enter a value in the Line Spacing field to decrease or increase the space between each line of text.

## Converting Text into Separate Objects

Text contained in a text field is treated as a single drawing object. You can easily separate the text so that each character becomes an individual drawing object that you can select and modify independently.

**To break a text object:**

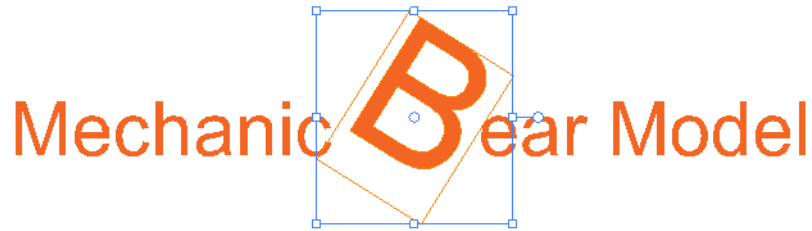
1. In the Drawing Tools toolbar, click on the Select  tool. You can also use the [!] default keyboard shortcut.
2. In the Drawing or Camera view, select the text object you want to break.



3. Select **Tools > Break Text Apart**.



Each character is now surrounded by its own bounding box that you can modify, they remain text objects that you can edit.



4. Select **Tools > Break Text Apart**, once more, on a single character text to break it into a regular drawing object, with no more text attributes.

## More Drawing Tools




Toon Boom Studio provides some other useful drawing tools:

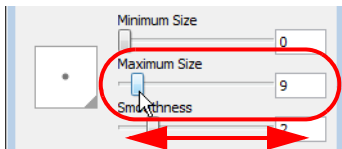
- Shape Tools, on page 89
- Polyline Tool, on page 90
- Contour Editor Tool, on page 91
- Perspective Tool, on page 93
- Cutter Tool, on page 94
- Scissor Tool, on page 95

### Shape Tools

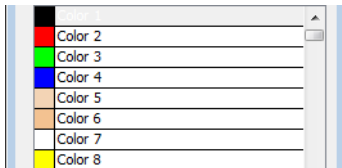
In Toon Boom Studio, you can use the shape tools to draw with circles, squares or lines.

**To draw with a shape tool:**

1. In the Timeline view, select the cell you want to draw in.
2. In the Drawing Tools toolbar, select one of the Shapes tool:
  - ▶  **Ellipse tool:** You can also select **Tools > Drawing Tools > Ellipse** from the top menu or press [2], the default keyboard shortcut, to cycle through the tools.
  - ▶  **Rectangle tool:** You can also select **Tools > Drawing Tools > Rectangle** from the top menu or press [2], the default keyboard shortcut, to cycle through the tools.
  - ▶  **Line tool:** You can also select **Tools > Drawing Tools > Line** from the top menu, or press [2], the default keyboard shortcut, to cycle through the tools.
3. In the Pen view, set the size of your shape's line using the Maximum slider.



4. You can change the colour of the shape's line using the default colour swatches in the Colour view.



5. In the Drawing or Camera view, click and drag to draw your shape.



- ▶ Hold down [Shift] to lock the rectangle or the ellipse ratio to 1:1, this will create a square or circle.
- ▶ Hold down [Alt] to draw the rectangle or ellipse from its centre.
- ▶ Hold down [Shift] to snap the line at 15 degree increments.
- ▶ Hold down [Alt] to connect the starting point of the line you are drawing to the ending point of the previous one.



Refer to the *Pen View* topic to learn more about Pen view.

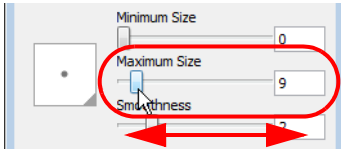
Refer to the *Adding Colours* chapter to learn more about adding colour and using the Colour view.

## Polyline Tool

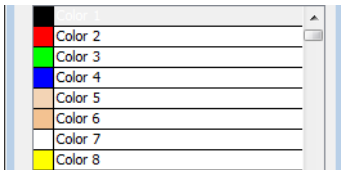
The Polyline tool is used to draw shapes. Just like the Pencil and Shape tools it is a central vector type of line. To form a shape, you need to click to add a point and then, without releasing the mouse, drag to pull the handle in the desired direction before adding the next point and repeating the same operation.

### To use the Polyline tool:

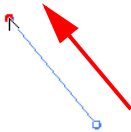
1. In the Timeline view, select the cell where you want to draw your polyline shape.
1. In Drawing Tools toolbar, select the Polyline tool.  
You can also select **Tools > Drawing Tools > Polyline** from the top menu or press [1], the default keyboard shortcut, to cycle through the tools.
2. In the Pen view, set the size of the polyline using the Maximum slider.



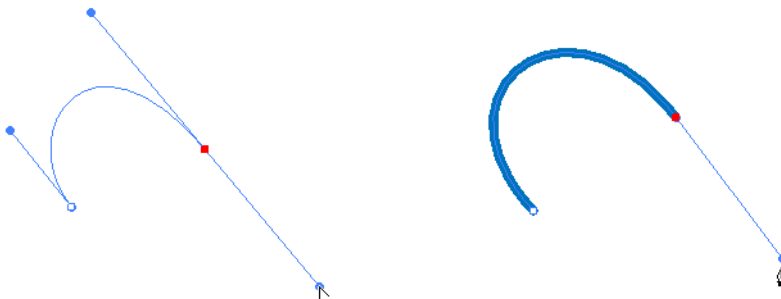
3. You can change the colour of the polyline using the default colour swatches in the Colour view.



4. In the Drawing or Camera view, click and drag to create a starting point and a Bezier handle to shape your line.
  - ▶ Press [Alt] to pull only one handle, instead of two.
  - ▶ Press [Shift] to lock the handles to 45, 90, or 180 degrees.



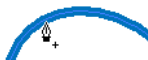
5. Click again in a new area and drag the mouse to create a second point and Bezier handle.



6. Repeat the previous step until the shape is completed.
7. To close a shape so that there are no gaps:
  - Place your pointer over a point and click.  
An "o" 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.  
A "+" will appear when your pointer is over a spot you can use to close the shape.



- To remove a control point on the line, press [Shift] and click on the point. A "-" will appear when your pointer is over a point to delete.



- If necessary, you can use the Contour Editor  tool to reshape the line.




Refer to the *Contour Editor Tool* to learn more about this tool.

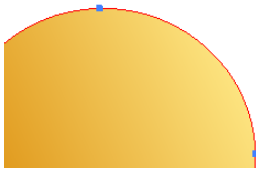
## Contour Editor Tool

The Contour Editor tool is used to correct line shapes and to modify part of a colour zone. If a line is too thin or has a gap in it, you can modify and correct it with this tool. This tool can also be used to create elaborate shapes from a simple one.

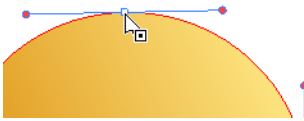
The Contour Editor displays the vector points around a shape and the central vector point in a pencil line. Pulling or Pushing on these points adjusts a brush line's thickness or a central vector shape.

### To use the Contour Editor tool:

- In the Drawing Tools toolbar, select the Contour Editor  tool. You can also select **Tools > Drawing Tools > Contour Editor** from the top menu or press [1], the default keyboard shortcut, to cycle through the tools.
- In the Drawing or Camera view, click on the shape's line or on a pencil line to edit it.

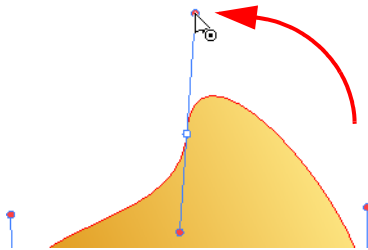


- Select one point or several points by clicking on them or circling around them.

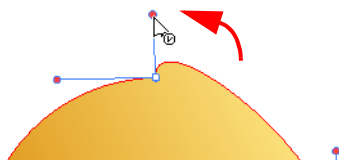


- To modify the shape, you can:

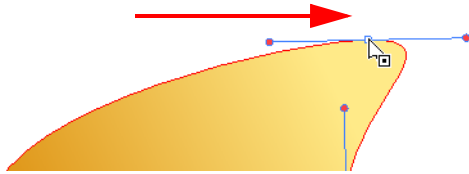
- Pull on the Bezier handle. Both point's handles will move as one.



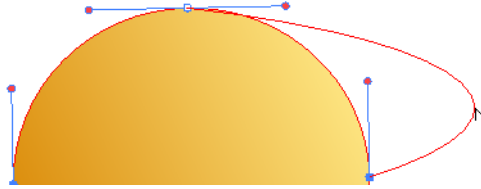
- Hold down [Alt] (Windows) or [⌘] (Mac OS X) and pull on one of the Bezier handles. The point's handles will move independently from the other one.



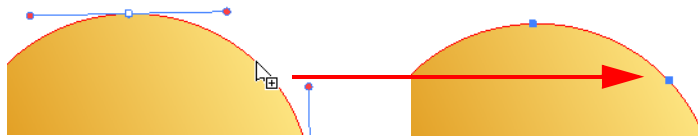
- ▶ Move the selected points to a new area.



- ▶ Pull directly on the line in-between two points. No selection is necessary.




- ▶ Hold down [Ctrl] (Windows) or [Alt] (Mac OS X) and click on the line to add a new control point.



- ▶ Select a control point and press [Delete] to delete it.

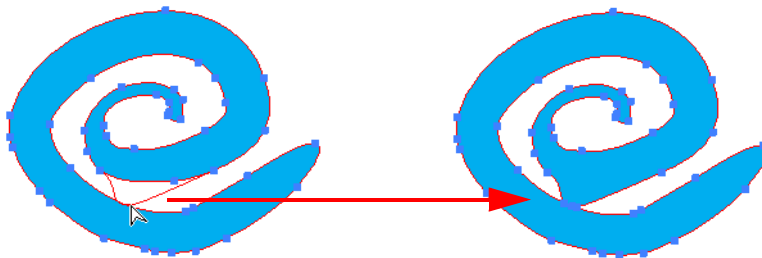


## Snap to Contour

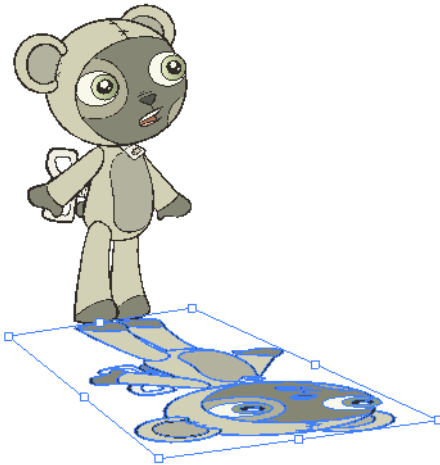
When using the Contour Editor  tool, you can enable the Snap to Contour option to snap the selected control point to the vector line.

**To enable and use the Snap to Contour option:**

1. In the Drawing Tools toolbar, select the Contour Editor tool.
2. Select **Tools > Snap to Contour** to enable the option. A check will appear beside the enabled command.
3. Select a Control Point and as you move it you will feel it is attracted to the contour lines. Releasing the point on the line snaps it to it.




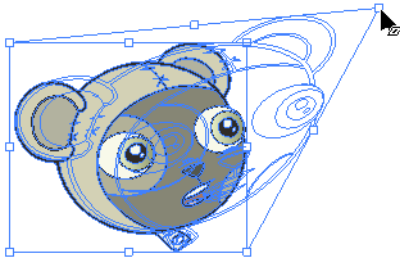
## Perspective Tool





The Perspective tool is used to deform a selection and alter its perspective.

**To deform a drawing object:**

1. In the Drawing Tools toolbar, select the Perspective  tool. You can also select **Tools > Drawing Tools > Perspective** or press [1], the default keyboard shortcut to cycle through the tools.
2. In the Drawing or Camera view, select the drawing objects you want to deform.
3. Click and drag the bounding box's anchored points to deform it.




You can press and hold [Ctrl] (Windows) or [⌘] (Mac OS X) while using the Select  tool to temporarily switch to the Perspective  tool. Refer to *Selecting Drawing Objects* topic to learn more about the Select tool.

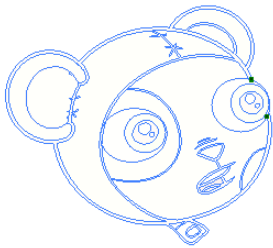
## Cutter Tool



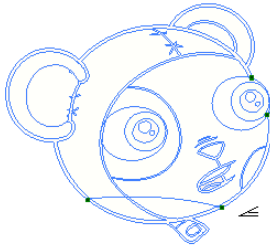
The Cutter tool is used to cut a part of your drawing and separate it from the rest, it does this by creating a vector stroke that lets you split the shape. You can show the vector strokes which make up your drawing and visualize the vector line drawn by the Cutter tool as you draw it.

### To use the Cutter tool:

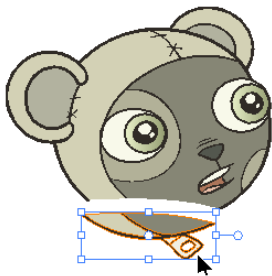
1. In the Drawing Tools toolbar, select the Cutter  tool.  
You can also select **Tools > Drawing Tools > Cutter** from the top menu or press [4], the default keyboard shortcut, to cycle through the tools.
2. Select **View > Show Strokes** from the top menu or press [K], the default keyboard shortcut to display the vector lines composing your drawing.





3. In the Drawing or Camera view, draw the separation line on your drawing.



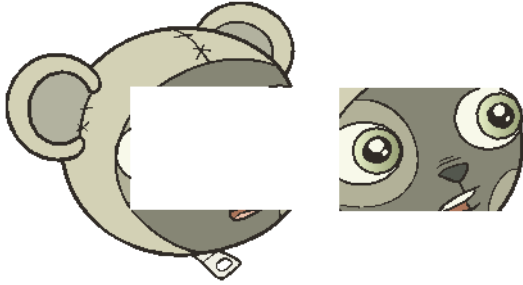
4. Once you split your drawing, you can use the Select  tool to select the separated part and reposition or transform it.



 Refer to the [Selecting Drawing Objects](#) topic to learn more about the Select  tool.




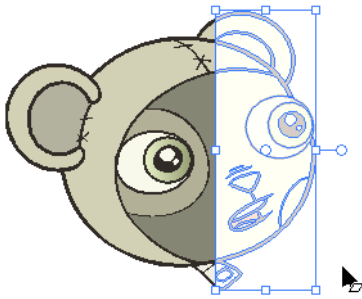
## Scissor Tool



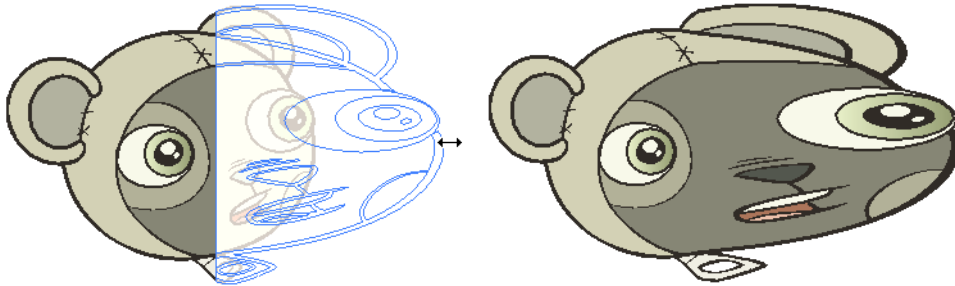
The Scissor tool is used to cut a selection inside a drawing object and reposition or transform it right-away without switching tool.

**To cut parts from a drawing using the Scissor tool:**

1. In the Drawing Tools toolbar, select the Scissor  tool.  
You can also select **Tools > Drawing Tools > Scissor** from the top menu or press [4], the default keyboard shortcut, to cycle through the tools.
2. In the Drawing or Camera view, click and drag to create a square selection to cut inside your drawing. You can press and hold [Alt] (Windows) or [⌘] (Mac OS X), the default keyboard shortcut, to make a lasso selection.



3. Use the Scissor tool to move, scale, rotate or translate the drawing piece. If you deselect the cut piece, or the Scissor tool, the cut area will disappear and the object will remain whole.

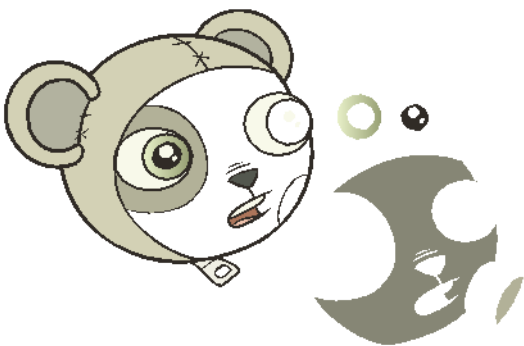


## More Drawing Options

Toon Boom Studio provides many useful drawing and design options.


- Group and Ungroup, on page 96
- Smooth, on page 97
- Optimize, on page 98
- Flatten and Optimize, on page 97
- Transform, on page 99
- Arrange, on page 100
- Show Current Drawing on Top, on page 100

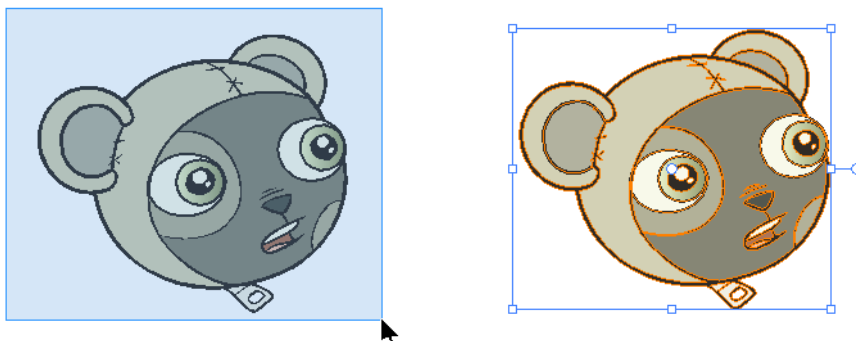
### Group and Ungroup



In Toon Boom Studio, each stroke in a drawing can be selected independently until they are flattened, but then each different colour shapes still remain independent from one another. It is useful to be able to edit your drawing one shape at a time, but depending on the current task, it might be useful to be able to quickly select a grouping of these strokes. For example, when you need to reposition or transform the entire head of a character, you do not want to drop the nose or an eye.

**To group drawing objects:**

1. In the Drawing Tools toolbar, click on the Select  tool. You can also access this Select tool by going to **Tools > Drawing Tools > Select** or press the [I] default keyboard shortcut.
2. In the Drawing or Camera view, select the drawing objects you want to group together. If you want to select all the shapes contained in your drawing, you can use the default keyboard shortcut [Ctrl]+[A] (Windows) or [⌘]+[A] (Mac OS X).




3. Select **Tools > Group** or you can press [Ctrl]+[G] (Windows) or [⌘]+[G] (Mac OS X).

Now your drawing objects are grouped and will be all selected with a single click.

**NOTE:** Grouping is reversible, you can always ungroup selected drawing objects and select the shapes independently.


**To ungroup drawing objects:**

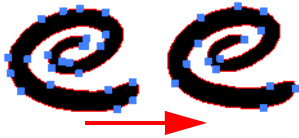
1. In the Drawing Tools toolbar, click on the Select  tool. You can also access the Select tool by going to **Tools > Drawing Tools > Select** or press the [!] default keyboard shortcut.
2. In the Drawing or Camera view, select the grouped drawing objects you want to ungroup and select **Tools > Ungroup** or you can press [Ctrl]+[Shift]+[G] (Windows) or [⌘]+[Shift]+[G] (Mac OS X).

**Smooth**

The Smooth operation is used to smooth out a selected drawing object and remove extra vector points.

**To use the Smooth operation:**

1. In the Drawing or Camera view, select your drawing object you wish to smooth using the Select  tool.
2. Select **Tools > Smooth** from the top menu.

**Flatten and Optimize**


The Flatten and Optimize operation acts similar one to another. They are used to merge shapes and brush strokes of a same drawing into a single flat layer. If you draw lines to fix a drawing or a line with many brush strokes, or draw a complex shape from many different shapes superposed, it can be useful to flatten them all into a single shape because lines are drawn one of top of each other, if you intend on repainting the shape or line or modifying it, it will be easier if they are merged together as one.

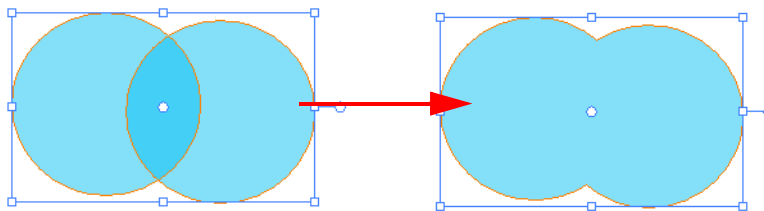
**Flatten**

The Flatten operation is used to merge shapes and brush strokes of a drawing into a single flat layer.

This means that if you have shapes or strokes of a transparent colour, you will lose the overlapping effect.

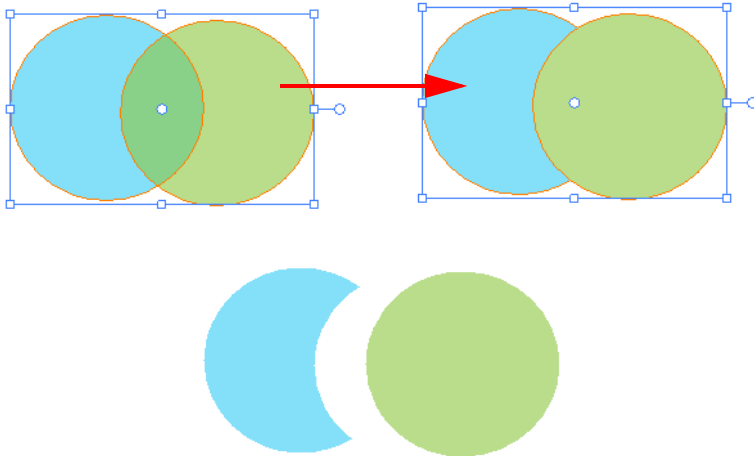
**To use the Flatten operation:**


1. In the Drawing or Camera view, select the drawing objects you wish to flatten using the Select  tool. If you want to select every shape in your drawing, you can press [Ctrl]+[A] (Windows) or [⌘]+[A] (Mac OS X), the default keyboard shortcut to select all.
2. Select **Tools > Flatten** from the top menu.
  - ▶ Shapes of the same colour will be merged together. In this example, the two circles overlapping one another were painted using a transparent colour.



- ▶ Shapes of different colours will remain separate. In this example, the two circles overlapping one another were painted using two different transparent colours. The green circle on the right was painted on top of

the blue circle on the left. When they are flattened, the parts overlapped by a higher level layer shape are removed, in this case, leaving the blue circle cropped.



When drawing with the Brush  tool, you can also decide to instantly flatten the strokes as you draw them using the Draw Top Layer option.

**To enable the Draw Top Layer option:**

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

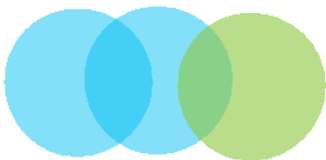
**To disable the Draw Top Layer option:**

- ▶ When the option is enabled, select **Tools > Draw Top Layer** from the top menu.


## Optimize

The Optimize operation is used to merge shapes and brush strokes of a same drawing into a single flat layer. Unlike the Flatten option, the Optimize command will merge the selected drawing shapes or strokes only if merging them will not change the appearance of the final image.

If you have transparent shapes overlapping one another, they will not be merged or flattened preserving the transparent overlapping effect.




**To use the Optimize operation:**

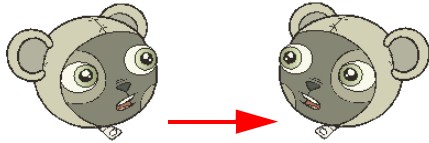
1. In the Drawing or Camera view, select the drawing objects you want to optimize using the Select  tool. To select every shape in your drawing, you can press [Ctrl]+[A] (Windows) or [⌘]+[A] (Mac OS X), the default keyboard shortcut to select all.
2. Select **Tools > Optimize** from the top menu.
  - ▶ Every overlapping shape of the same non-transparent colour will be merged together.
  - ▶ Every overlapping shape of different non-transparent colours will be merged and cropped.

## Transform

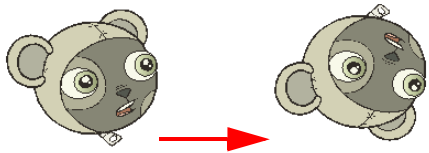
Use the different Transform operations to apply a specific transformation such as a flip or a rotation to a drawing shape selection.

**To use the Transform options:**

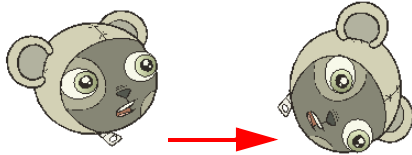
1. In the Drawing or Camera view, select the drawing object you wish to flip using the Select  tool. If you want to select every shape in your drawing, you can press [Ctrl]+[A] (Windows) or [⌘]+[A] (Mac OS X), the default keyboard shortcut to select all.
2. Select **Tools > Transform > Flip Vertical** or **Flip Horizontal** from the top menu.
  - ▶ **Flip Horizontal**  
This will horizontally flip the currently selected shape.



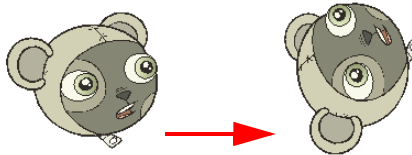
- ▶ **Flip Vertical**  
This will vertically flip the currently selected shape.



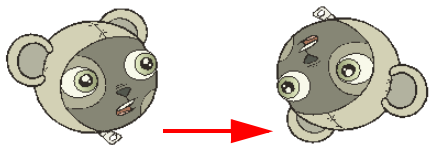
- ▶ **Rotate 90 CW**  
This will rotate the currently selected shape clockwise 90 degrees.



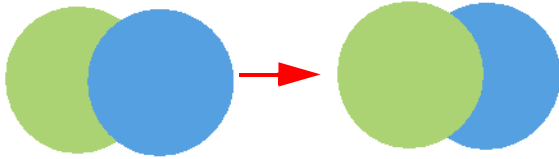
- ▶ **Rotate 90 CCW**  
This will rotate the currently selected shape anti-clockwise 90 degrees.



- ▶ **Rotate 180**  
This will rotate the currently selected shape 180 degrees.




## Arrange



Use the various Arrange options to reorder the shapes and strokes of a drawing.

**To reorder shapes in your drawing:**

1. In the Drawing or Camera view, use the Select  tool to select the drawing objects you want to reorder.
2. Select **Tools > Arrange > Bring to Front, Bring Forward, Send to Back** or **Send Backward** from the top menu.
  - ▶ **Bring to Front**  
Brings the currently selected shape on top of all the others.
  - ▶ **Bring Forward**  
Brings the currently selected shape one level higher.
  - ▶ **Send to Back**  
Sends the currently selected shape under all the others.
  - ▶ **Send Backward**  
Sends the currently selected shape one level lower.

## Show Current Drawing on Top

By default, the Show Current Drawing on Top option is enabled. This means that when you are working in the Camera view with a drawing tool, the selected drawing is automatically displayed on top of all the others. This facilitates editing.

If you need to work on the selected drawing while seeing the final composition of your scene, it is necessary to place the drawing in the correct order compared to all of the others in the scene. You can do this by enabling the Show Current Drawing on Top option.

In the following example the belly of the turtle was selected.



**To enable and disable the Show Current Drawing on Top:**

- ▶ When the option is enabled, select **View > Show Current Drawing on Top** to disable it.
- ▶ When the option is disabled, select **View > Show Current Drawing on Top** to enable it.

## Preferences

You can customize some options in the Toon Boom Studio Preferences panel. Here are the options related to Drawing and Designing:

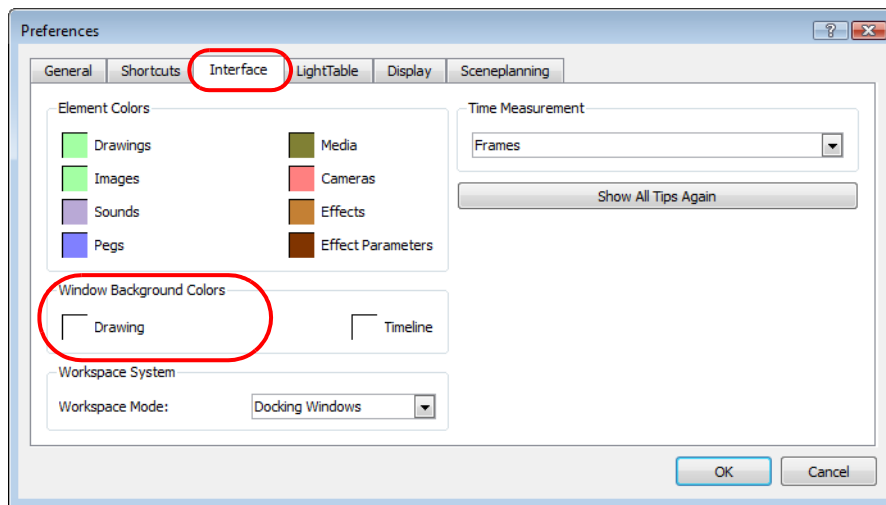
- Window Background Colours, on page 101
- Light Table, on page 102

To open the Preferences panel:

- ▶ Windows:  
Select **Edit > Preferences** from the top menu.
- ▶ Mac OS X:  
Select **Toon Boom Studio 7.1 > Preferences** from the top menu.

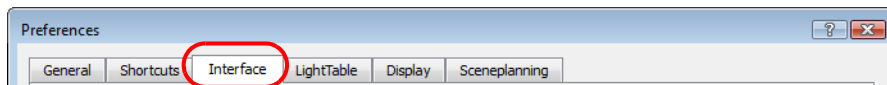
### Window Background Colours

You can change the background colour of the Drawing view. You may want to do this if you are drawing with very light colours.

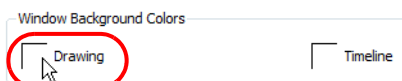


To change the colour of the Drawing view:

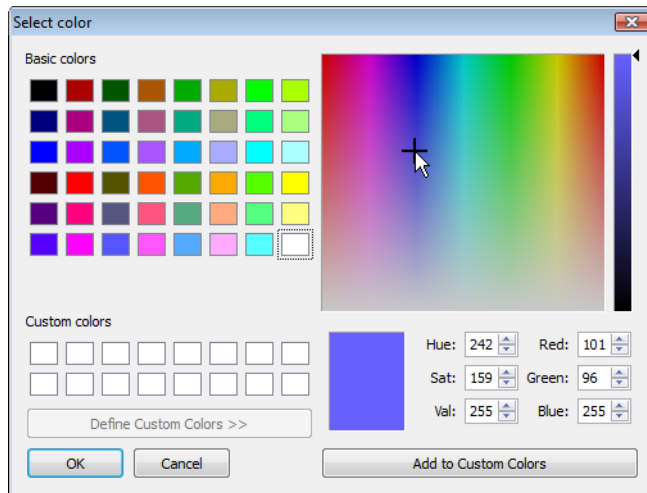
1. In the Preferences panel, click on the Interface tab.



2. In the **Window Background Colours** section, click on the square beside Drawing.



The **Select Colour** dialog box opens.

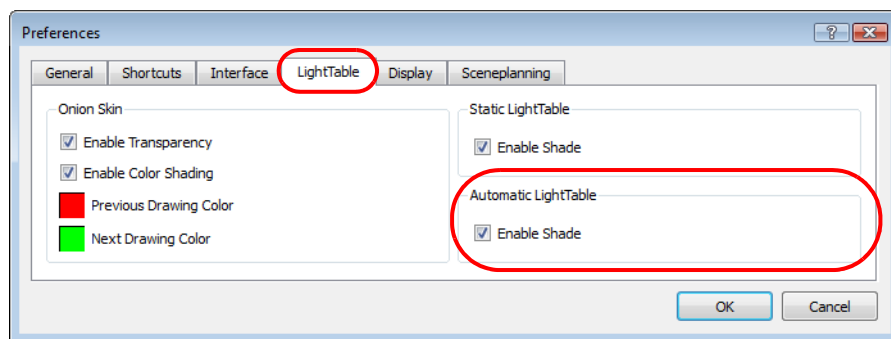


3. Choose a colour.
4. Click OK in the Select Colour dialog box,
5. Click OK in the Preferences panel.

The Drawing view background colour will change to the selected colour.

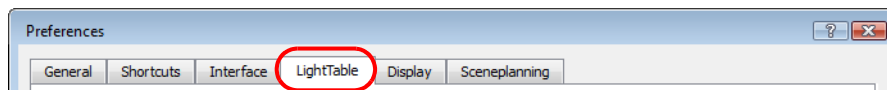
## Light Table

You can change the way the drawings are displayed when using the Autoight Table option.



**To choose the Automatic Light Table option:**

1. In the Preferences panel, click on the LightTable tab.



2. In the Automatic LightTable section:



- ▶ Click in the Enable Shade check box to enable this option and display the other columns drawings as washed out colours when you are using the Automatic Light Table.
  - ▶ Disable the Enable Shade check box to display the other columns drawings with their real colours when you are using the Automatic Light Table.
3. Click on the OK button.



## What's Next?

So far you have learned about:

- Drawing in Toon Boom Studio
- Sketching in Toon Boom Studio
- Tracing in Toon Boom Studio
- Some designing basics
- Using various drawing tools and drawing options in Toon Boom Studio.

It is now time to learn about importing artwork, so you can start to gather up elements for your project.



# Chapter 5 Adding Colours



With Toon Boom Studio, you can add colour to your projects and even create sets of colours for your characters. These sets of colours are called colour palettes. With these palettes, you will discover that adding colours to your movie is one of the easiest and useful steps in the process!

In this chapter, you will learn about the following:

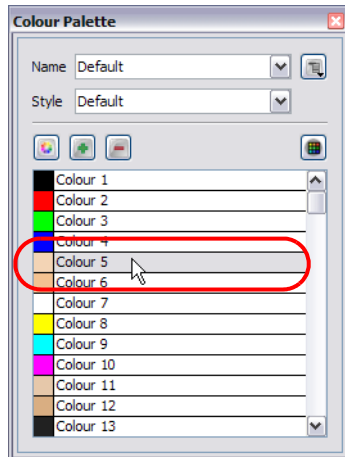
- How to Paint, on page 106
- Colours, on page 107
- Colour Display Modes, on page 120
- Using the Painting Tools, on page 121
- Closing Gaps, on page 125
- Selecting a Colour in a Drawing, on page 128
- Editing Gradients and Textures, on page 129
- Palettes, on page 132

## How to Paint

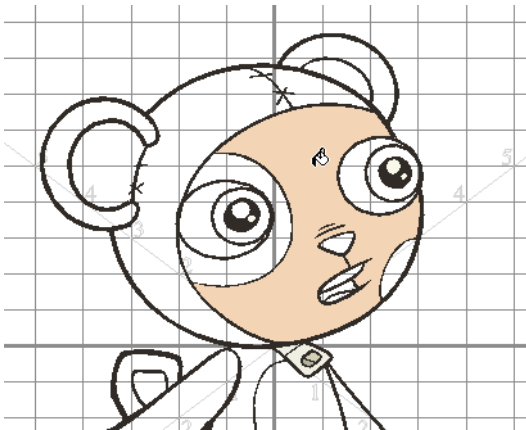
Follow these very simple instructions to learn how to paint your drawings. Once you master this operation you will be able to try all the tools and features explained below.

### To paint your drawings:

1. In the Drawing Tools toolbar, select the Paint  tool. The default keyboard shortcut is [#]. You can also select the Paint tool from the top menu **Tools > Drawing Tools > Paint**.
2. In the Colour Palette view, select a colour from the palette.



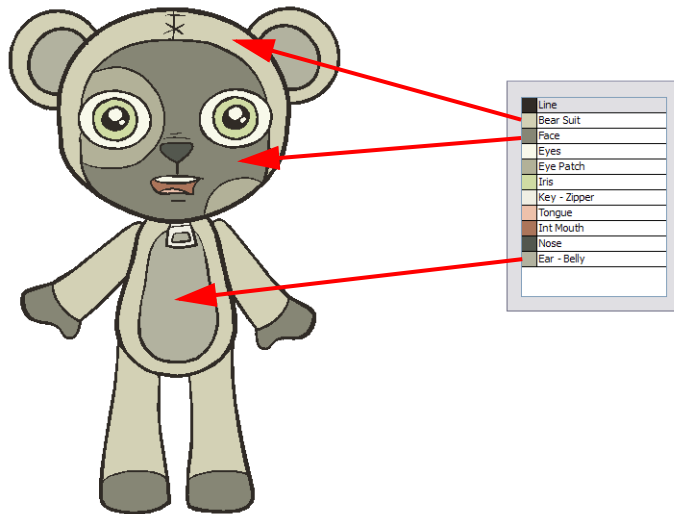
3. In the Camera or Drawing view, start painting the colours on your drawing.



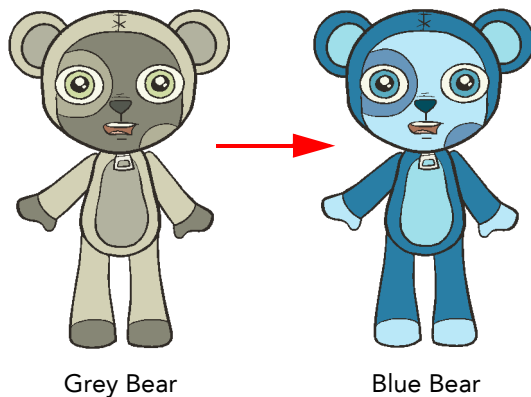
## Colours



In Toon Boom Studio, you use different colour swatches to paint your drawings, not just one swatch that you modify the tint of each time you want to paint a zone with a different colour. A colour swatch can also be called a colour pot. In the Colour Palette view, you choose a different colour swatch for each colour you want to paint in your drawing. You can add as many swatches as you want. You can also rename them or modify existing ones.



When you modify the colour of an existing swatch, it automatically updates all the zones painted with this swatch throughout the entire project. The colour swatch has a unique identification number that associates it with the painted zones. This way, you can change the look of your character at anytime without having to repaint it!



This topic is divided as follows:

- Adding a Colour Swatch, on page 108
- Deleting a Colour Swatch, on page 119

## Adding a Colour Swatch





You can create three different types of colour swatches:

- Solid Colour Swatch, on page 108
- Gradient Colour Swatch, on page 113
- Bitmap Texture Swatch, on page 117

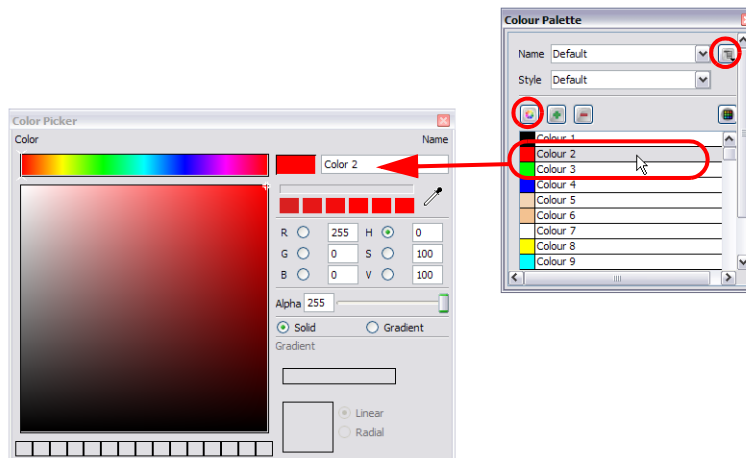
### Solid Colour Swatch



To add or modify a solid colour swatch using **Windows**:

1. In the Colour Palette view, click on the Add Colour  button. You can also click on the Menu  button and select **Colour > Add Colour**.
2. To edit your colour, click on the Menu  button and select **Colour > Edit Colour**. You can also double-click on the colour pot or click on the Edit Colour  button.

The **Colour Picker** window opens.




3. To set your colour:
  - ▶ Select the colour you want from the colour wheel.

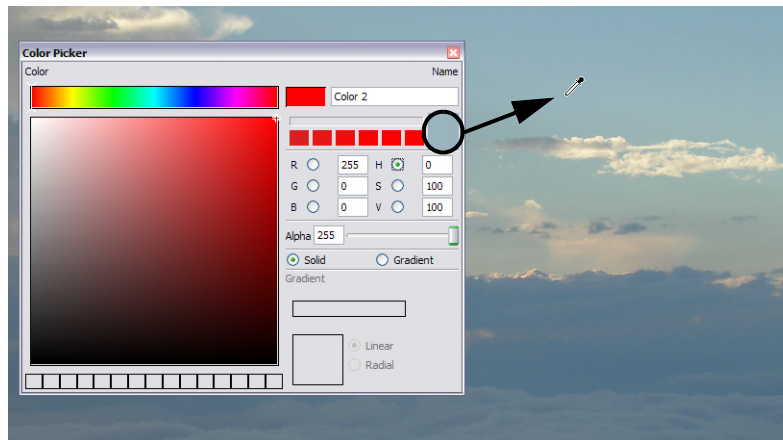
OR

  - ▶ Type in the HSV or RGB value in the value fields. Click on the R,G,B,H,S or V radio buttons to change the look of the colour picking area.

R	<input type="radio"/>	255	H	<input checked="" type="radio"/>	0
G	<input type="radio"/>	0	S	<input type="radio"/>	100
B	<input type="radio"/>	0	V	<input type="radio"/>	100

OR

- ▶ Click on the Dropper  button to select any colour on your screen. It can be from the Studio's interface, your Operating System or any other opened application.



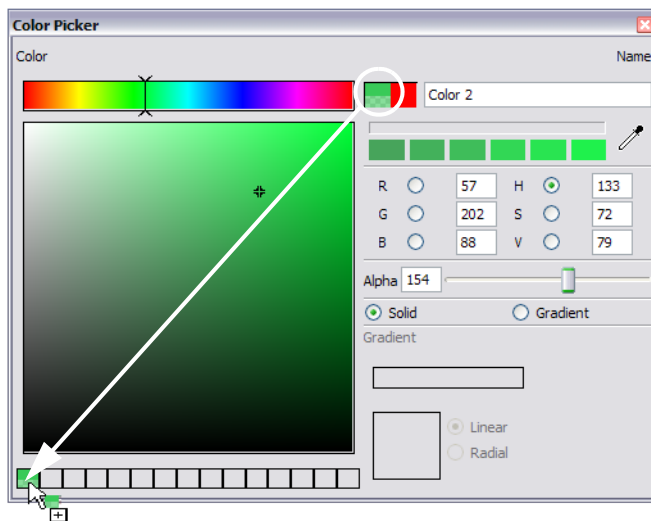
4. If needed, click on the Shade Scale's swatches to modify the shade of the selected colour.



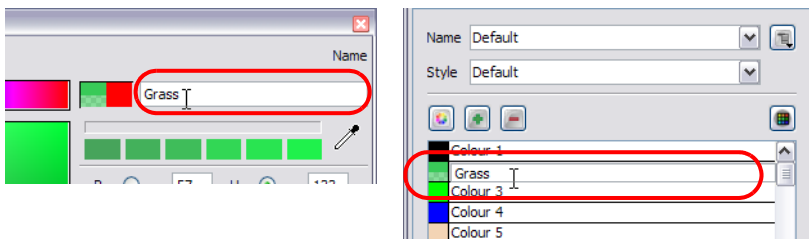
5. If necessary, adjust the level of transparency with the Alpha slider, or type the value directly in the Alpha field. The value "0" will give you a completely transparent colour and the value "255" will give a completely opaque colour. Anything in-between these two values will give you a more or less semi-transparent colour.







6. If necessary, select the new colour from the Colour Display area and drag it to the Colour Storage Library, so you can quickly access it later.



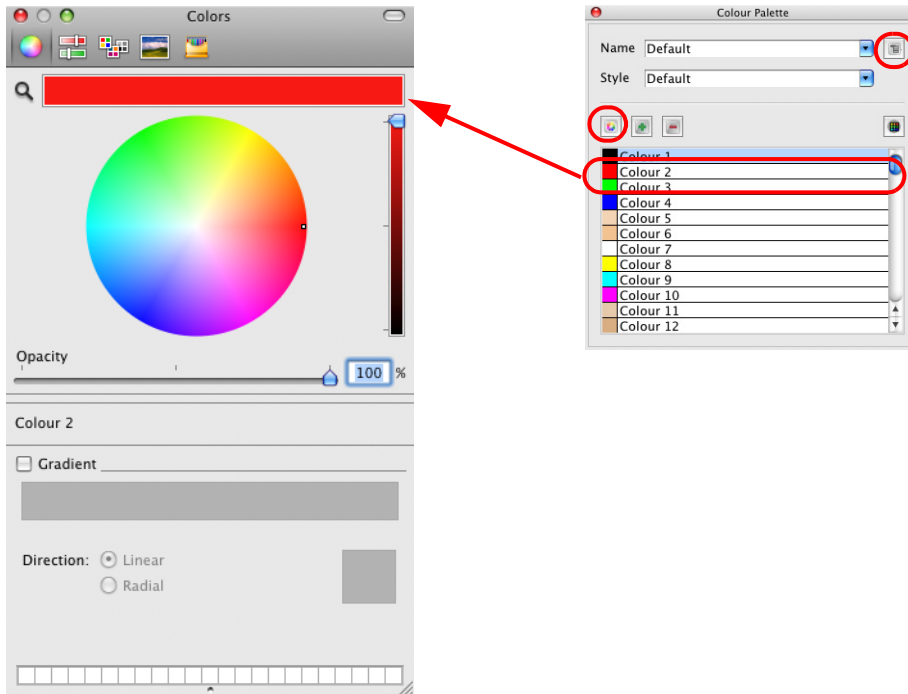
7. You can rename the colour swatch in the Colour Picker window or directly in the colour list by double-clicking on its name.








**To add or modify a solid colour swatch using Mac OS® X:**

1. In the Colour Palette view, click on the Add Colour  button. You can also click on the Menu  button and select **Colour > Add Colour**.
2. To edit your colour, click on the Menu  button and select **Colour > Edit Colour**. You can also double-click on the colour pot or click on the Edit Colour  button.

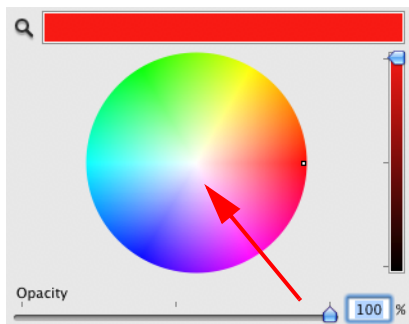
The **Colors** window opens.



3. Use the top buttons to select one of the five colour picker display modes:

- ▶  **Colour Wheel**
- ▶  **Colour Slider**
- ▶  **Colour Palettes**
- ▶  **Image Palettes**
- ▶  **Crayons**

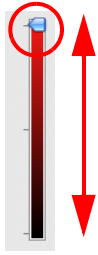
4. To select a colour from the **Colour Wheel** display mode:



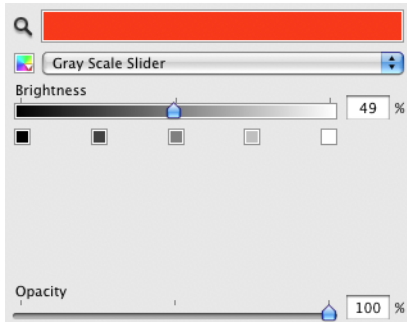
- ▶ Pick the colour you want from the colour wheel.



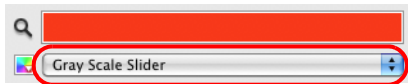
- ▶ If needed, use the Shade Scale's slider to modify the shade of the selected colour.



- To select a colour from the Colour Slider display mode:



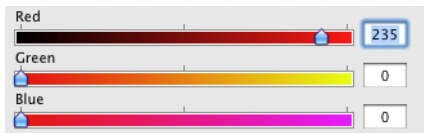
- ▶ From the slider type drop-down list, select which type of slider you want to use:



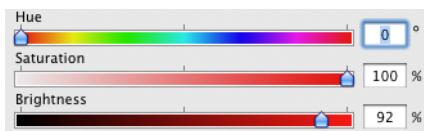
⇒ Gray Scale Slider



⇒ RGB Sliders

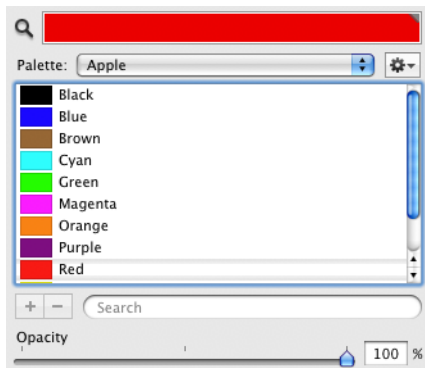



⇒ HSB Sliders

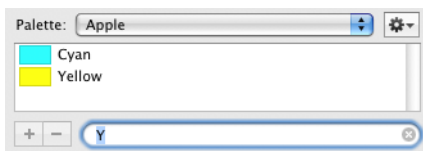


- ▶ Use the sliders to select a colour. You can also type in the values directly into the fields.

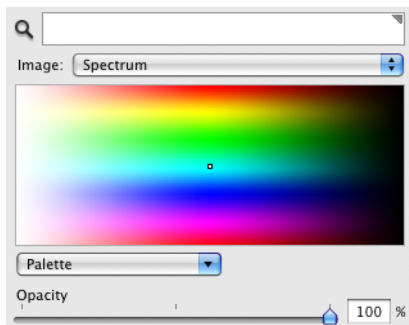
## 6. To select a colour from the Colour Palettes display mode:



- ▶ Using the palette drop-down list, select a system palette you want to display. These are system palettes, they are not linked to Toon Boom Studio.
- ▶ From the Palette Menu  button:
  - ⇒ Select **New** to create a new system palette.
  - ⇒ Select **Open** to open a system palette stored on your computer.
  - ⇒ Select **Rename** to rename to current palette. Note that you can not rename an apple default palette.
  - ⇒ Select **Remove** to delete the current palette. Note that you can not remove an apple default palette.
- ▶ Use the + button to Add a new colour swatch to a palette you created. Note that you can not add colours to one of apple's default palettes.
- ▶ Use the - button to Remove a colour swatch from a palette you created. Note that you can not remove colours from one of apple's default palettes.
- ▶ Type a letter in the search field to narrow down the list to only swatch name containing this letter to help you find a particular colour from the current palette colour list.

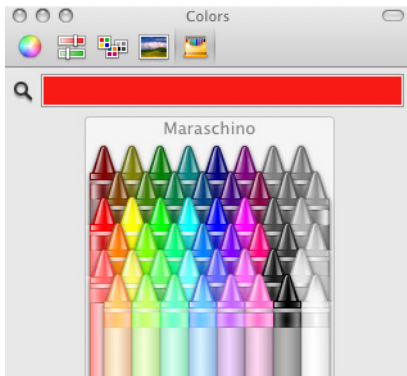


## 7. To select a colour from the Image Palettes display mode:



- ▶ From the Image drop-down list, you can select the image you wish to display in the main space. By default only the Spectrum image is available. Once you start adding pictures, they will be added up to the list.
- ▶ From the Palette drop-down menu:
  - ⇒ Select New from File to browse to a picture of your choice to be displayed in the main space.
  - ⇒ Select Rename to rename the current picture. This is the name that will appear in the Image drop-list. Note that you can not rename an Apple default picture.
  - ⇒ Select Remove to remove the current picture. Note that you can not remove an Apple default picture.
  - ⇒ Select Copy to add the current image to your clipboard.
  - ⇒ Select New from Clipboard to use a copied image file or a selection within an image, still stored in your clipboard.

8. To select a colour from the Crayons display mode:



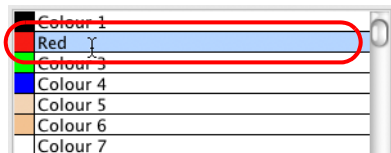
- ▶ Click on a crayon from the image to select that colour.
9. In all of the colour picker display mode, you can also:
- ▶ Click on the Magnifier to select any colour on your screen. It can be from the Studio's interface, your Operating System or any other opened application.



- ▶ If necessary, adjust the level of transparency with the Opacity slider, or type the value directly in the percentage field. The value "0" will give you a completely transparent colour and the value "100" will give you a completely opaque colour. Anything in-between these two values will give you a more or less semi-transparent colour.



10. You can rename the colour swatch in the Colour Palette view colour list by double-clicking on its name.

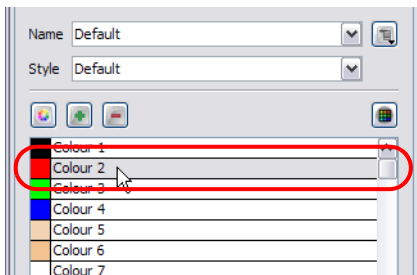


## Gradient Colour Swatch



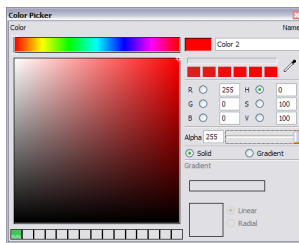
To create a gradient colour swatch using Windows:

1. In the Colour Palette view, select the colour to be modified.

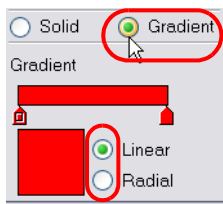


2. Click on the Colour Palette Menu button and select **Colour > Edit Colour**. You can also double-click on the colour swatch.

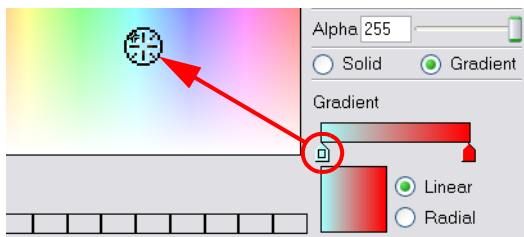
The **Colour Picker** window opens.



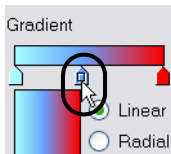
3. Enable the **Gradient** option.



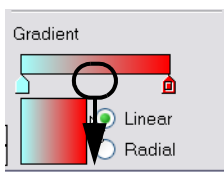
4. Select the **Linear** or **Radial** option.
5. Select the Gradient arrows to modify the colours.



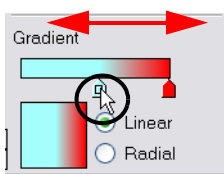
- ▶ Click between the arrows to add extra colours.



- ▶ Pull down the arrows to remove them.



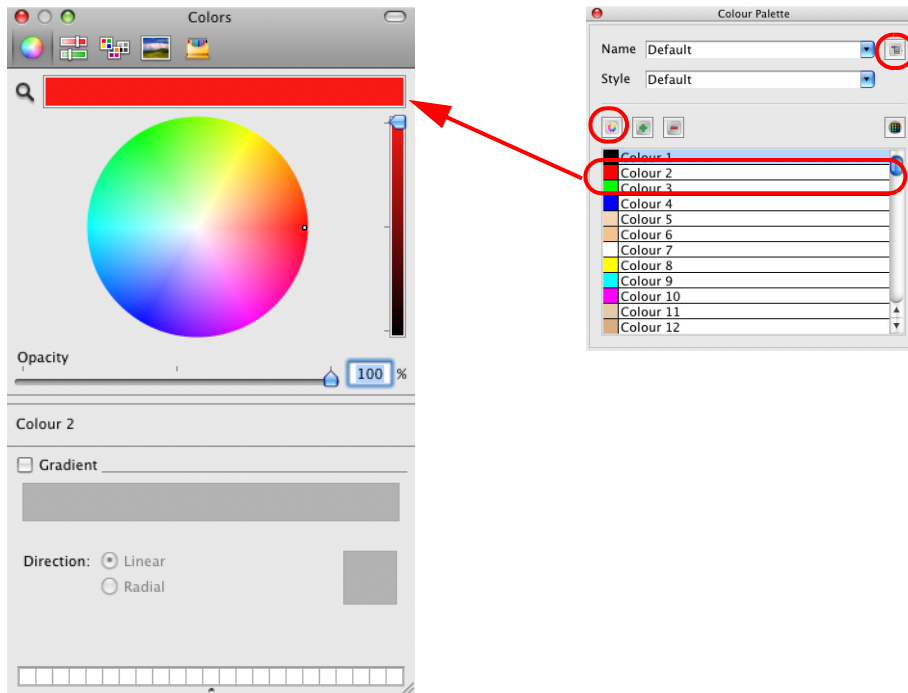
- ▶ Move the arrows left and right to modify the gradient distance.



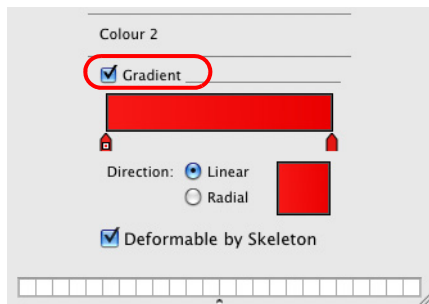
**To create a gradient colour swatch using Mac OS X.**

1. In the Colour Palette view, select the colour to be modified.
2. Click on the Colour Palette Menu button and select **Colour > Edit Colour**. You can also double-click on the colour swatch.

The **Colours** window opens.



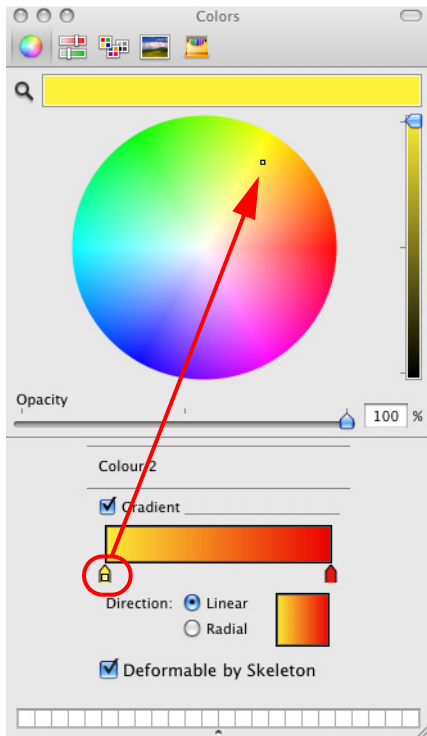
3. Enable the **Gradient** option.



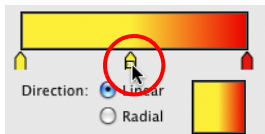
4. Select the **Linear** or **Radial** option.



5. Select the Gradient arrows to modify the colours.



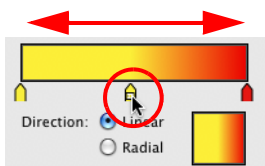
- ▶ Click between the arrows to add extra colours.



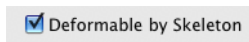
- ▶ Pull up the arrows to remove them.



- ▶ Move the arrows left and right to modify the gradient distance.




6. By default the Deformable by Skeleton option is enabled. This means that when creating a skeleton puppet animation, the gradient will be deformed following the bones. You can disable this option if you want the gradient to stay as it is. Refer to Chapter 10: Bones, on page 251 to learn more about Skeletons and Bones.

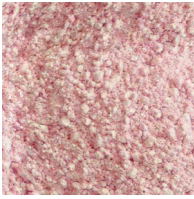


## Bitmap Texture Swatch



To create and edit a texture colour:

1. In the Colour Palette view, click on the Menu  button and select **Colour > Add Texture**.
2. Browse for any bitmap file created in a third party software.

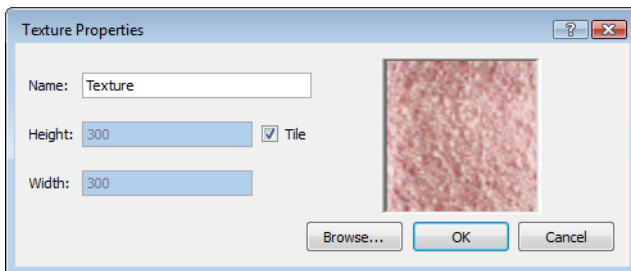


3. Click on the Open button to create the colour swatch.



4. In the Colour Palette view, select the texture swatch that you want to modify the texture of.
5. Double-click on the colour swatch to edit.

The **Texture Properties** dialog box opens.



6. To rename the colour swatch, type a new name in the Name field.

- Disable the Tile option if you want the texture to automatically scale up to the size of the painted zone. Enable the Tile option if you want your image to repeat over and over inside the drawing zone.



Tile Option Disabled



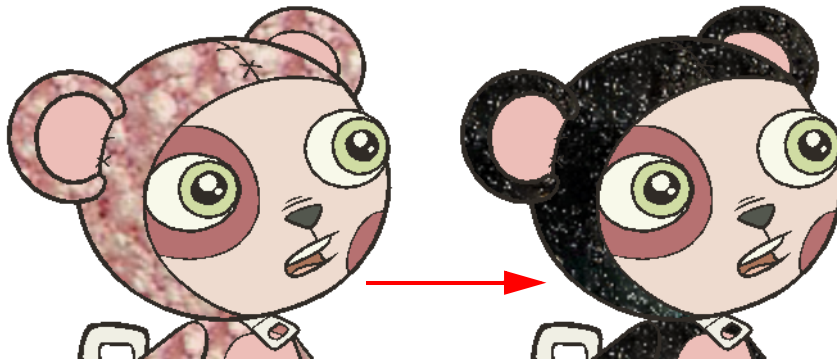
Tile Option Enabled

- Click on the OK button once the operation is completed.



Refer to the *Editing Gradients and Textures* topic to learn how to reposition textured zones in your drawings.

- You can also replace a texture once it is painted. For instance, if you decide to make the character's suit a dark granite colour instead of pink cotton, just update the texture file in the swatch and the entire project updates. Any transformation previously applied to the texture's position in your drawings will be kept.



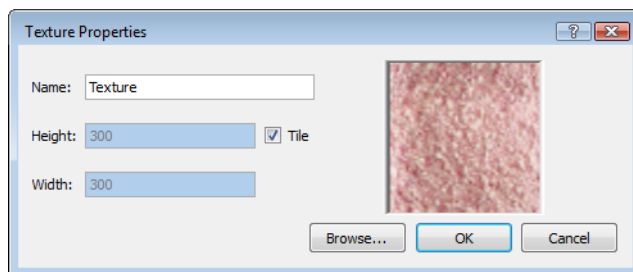
#### To replace a texture swatch:

- In the Colour Palette view, select the texture swatch you want to modify the texture of.



- Double-click on the colour swatch to edit.

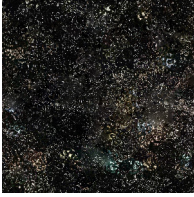
The **Texture Properties** dialog box opens.



- Click on the Browse button.  
The **Browse** window opens.



4. Browse for any bitmap file created in a third party software.



5. Click on the Open button to update the colour swatch.
6. Click on the OK button to complete the operation.



## Deleting a Colour Swatch

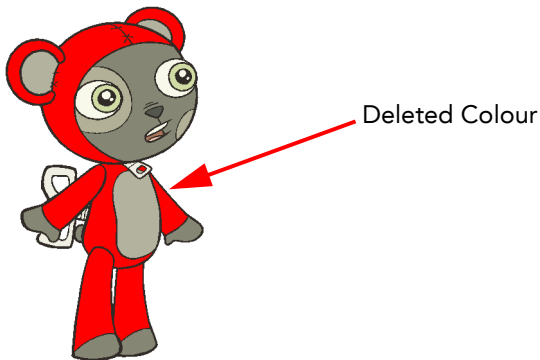
If a colour is not needed in a project, you can delete it from the list to avoid having too many colour swatches in your Colour Palette view.

**To delete a colour swatch:**

1. In the Colour view, select the colour swatches to delete.



2. In the Colour Palette view, click on the Delete Colour  button. You can also click on the Menu  button and select **Colour > Delete Colour**.
  - ▶ If you delete colour swatches already in use, the zones painted with them turn red so you can easily identify them.




## Colour Display Modes

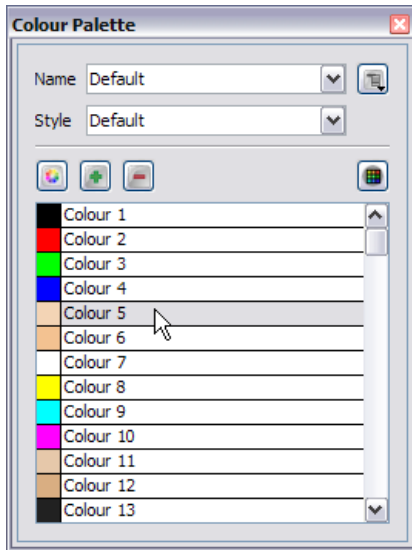
The Colour Palette view can display the colour swatches in two different ways:

- List Mode
- Swatch Mode

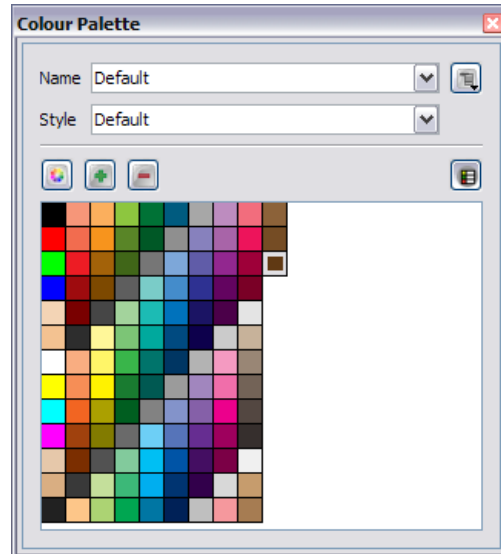
To toggle between the display modes:

- ▶ In the Colour Palette view, click on the Show/Hide Colour Names  button to toggle between the two modes.

You can also click on the Menu  button and select **Show/Hide Colour Names**.




List Mode

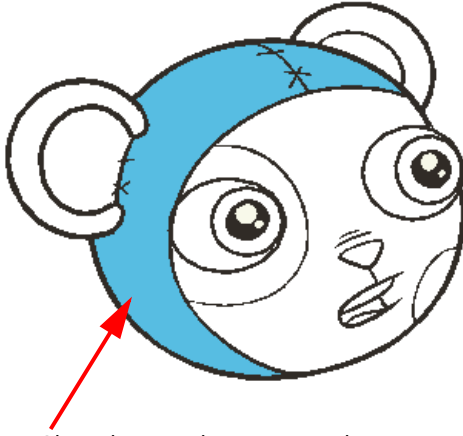


Swatch Mode

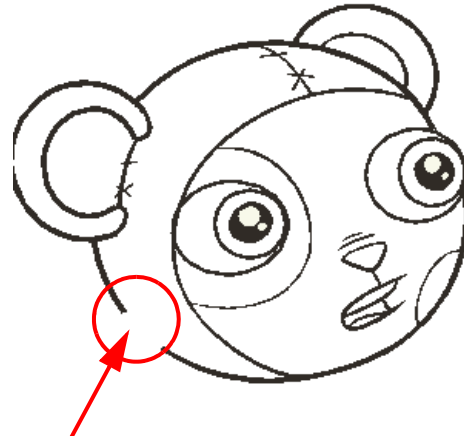
## Using the Painting Tools

The main tool you will use to paint your drawings with is the Paint  tool. Other painting tools are also available to make your painting process easier and faster.

The painting tools only paint closed zones. If you have gaps in your lines, you will have to close them using either the Brush, Pencil, Close Gap tools or the Automatic Close Gap option.



Closed area. The zone **can** be painted



Opened gap. The zone **cannot** be painted.

This topic is divided as follows:


- Painting with the Paint Tool, on page 122
- Painting with the Paint Unpainted Tool, on page 123
- Unpainting Areas with the Unpaint Tool, on page 124

## Painting with the Paint Tool

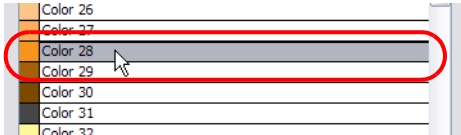
To paint with the Paint tool:

1. In the Timeline or Xsheet view, select the drawing you want to paint.

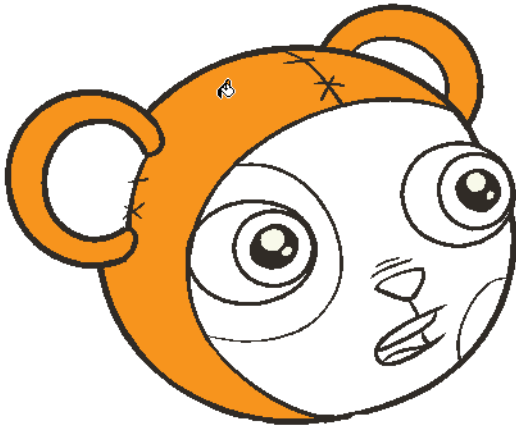


2. In the Drawing Tools toolbar, select the Paint  tool. The default keyboard shortcut is [#]. You can also select the Paint tool in the top menu under **Tools > Drawing Tools > Paint**.

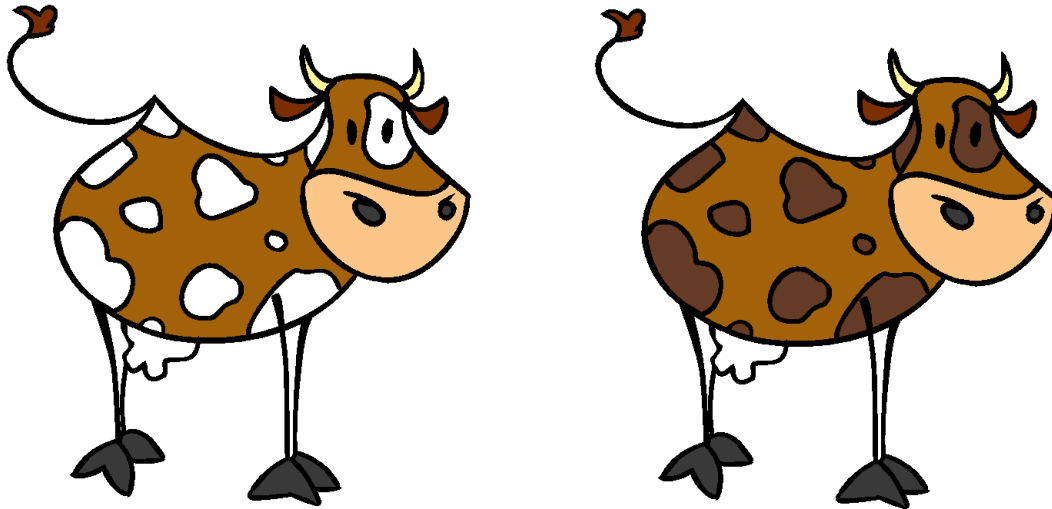
3. In the Colour Palette view, select a colour.



4. In the Drawing or Camera view, start painting by clicking in the different closed zones.



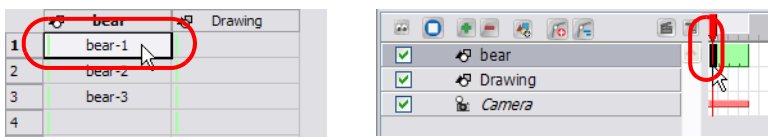
## Painting with the Paint Unpainted Tool




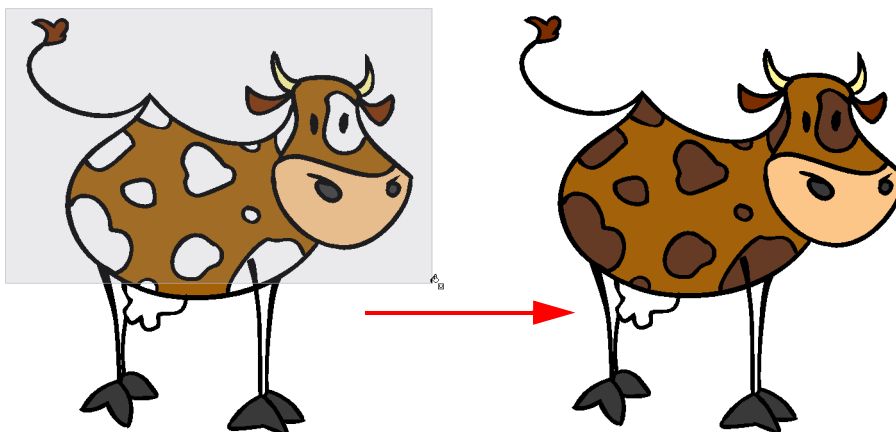
The Paint Unpainted tool only paints empty zones. Any line or filled zone will remain unchanged. For example, if you are painting a cow or a leopard, this tool is very useful when it is time to paint all the spots on the body. Instead of trying to click in each one of them, you can draw a large selection around the body to paint all the spots at once. All the empty zones will be painted and all the filled zones will remain untouched.

**To paint with the Paint Unpainted tool:**

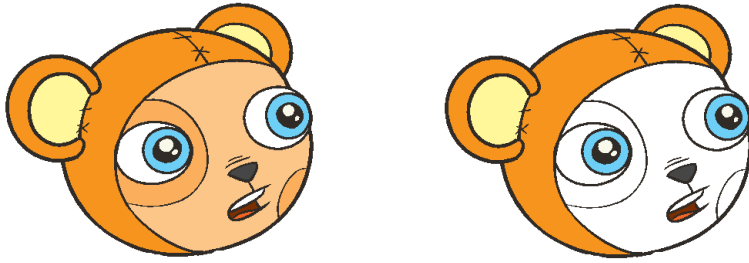
1. In the Timeline or Xsheet view, select the drawing you want to paint.



2. In the Drawing Tools toolbar, select the Paint Unpainted  tool, under the Paint tool category. You can also select the Paint Unpainted tool from the top menu under **Tools > Drawing Tools > Paint Unpainted**.
3. In the Drawing or Camera view, draw a wide selection containing all the zones to paint.



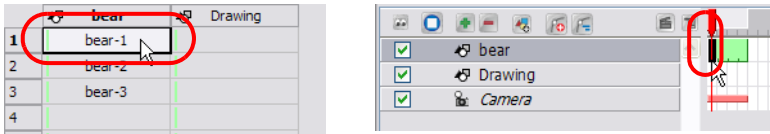
## Unpainting Areas with the Unpaint Tool




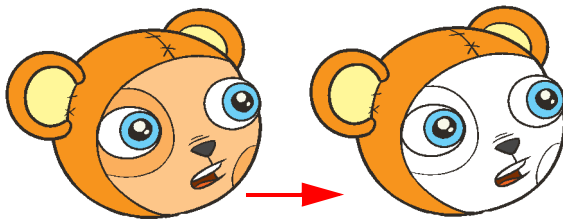
The Unpaint tool unpaints everything it touches. You can use it to unpaint zones you have painted by mistake, or to simply unpaint a drawing.

**To unpaint a drawing with the Unpaint tool:**

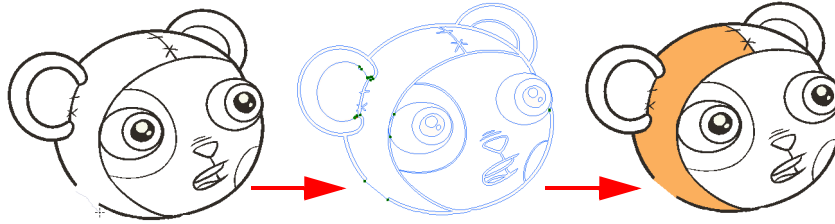
1. In the Timeline or Xsheet view, select the drawing you want to unpaint.




2. In the Drawing Tools toolbar, select the Unpaint  tool, under the Paint tool category. You can also select the Unpaint tool from the top menu **Tools > Drawing Tools > Unpaint**.
3. In the Drawing or Camera view, click on the zones to unpaint.



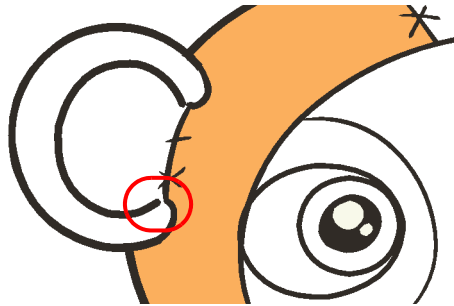
## Closing Gaps



When painting, you will notice that some of your drawing areas are not closed. To close the zone, you can draw the missing line with the Brush or Pencil tool. You can also close the gap with an invisible line. To do so, you can use the Close Gap  tool or the automatic close gap feature.



### What is a Gap?



A gap is a hole or break in your lines causing a zone to be opened, therefore not paintable. You can often find gaps where lines intersect or if you erased a portion of the line accidentally.

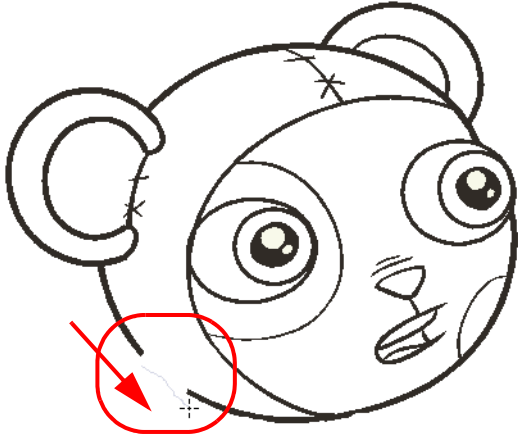
### Closing Holes with the Close Gap Tool

The Close Gap tool is used to close small gaps in a drawing. The Paint tool only paints closed areas. The Close Gap tool will create a small, invisible stroke between the two closest points to close the colour zone. You do not need to trace directly over the gap. You can draw it a few millimetres away and the Close Gap will automatically choose the two closest points and close the gap.

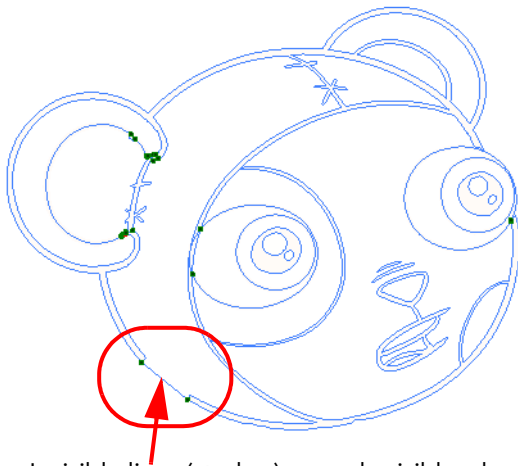
**To use the Close Gap tool:**

1. In the Drawing Tools toolbar, select the Close Gap  tool under the Paint tool category. You can also select the Close Gap tool from the top menu under **Tools > Drawing Tools > Close Gap**.
  - ▶ You can display the invisible lines with the **Show Strokes** option under **View > Show Strokes**. The default shortcut is [K].

2. In the Camera or Drawing view, draw an invisible line near to the gap to be closed. The gap will automatically close.

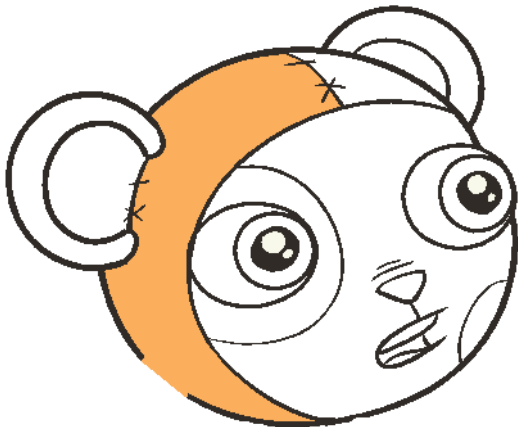


The new invisible line closing the gap appears.



Invisible lines (strokes) are only visible when you enable the Show Strokes option from the View menu. When you disable the option, you cannot see the strokes, but the lines are still there, so you can still paint your drawing.

3. In the Drawing or Camera view, paint the newly closed zone.





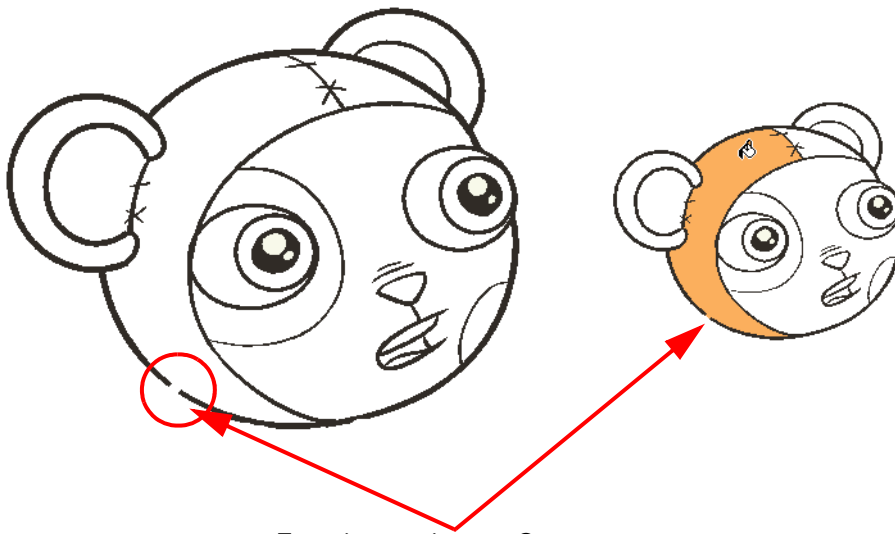
## Closing Holes using Automatic Close Gap

The Auto Gap option is used while painting drawings with small gaps. Instead of having to close them manually either with the Brush tool or Close Gap tool, Studio will analyze the drawing and close the gaps while you paint according to the selected mode.

The Auto Gap option has four modes available:

- **No Close Gap**  
No opened zones, regardless of the zoom level, will be painted.
- **Close Small Gap**  
Only the zones with very small gaps in the lines will be painted. Larger gaps will not be painted.
- **Close Medium Gap**  
Zones with small and medium gaps will be painted. The zones with larger gaps will not be painted.
- **Close Large Gap**  
Zones with small, medium and large gaps will be painted. Although, zones with very wide gaps will not be painted.

The automated gap closing is done using the zoom level of your Camera or Drawing view. If your eye does not see the gap, Studio won't either. If the gap is too big in the Camera or Drawing view, Studio will not close it and the zone will not be painted.



Zooming out in your Camera or Drawing view makes the gap appear smaller and the Auto Gap option will help you paint the zone without having to close it manually.

## Selecting a Colour in a Drawing


While working in your Camera or Drawing view, you may need to pick a colour from your drawing without going to the Colour Palette view, especially if you do not know which colour swatch it is. To do so, you will use the Dropper

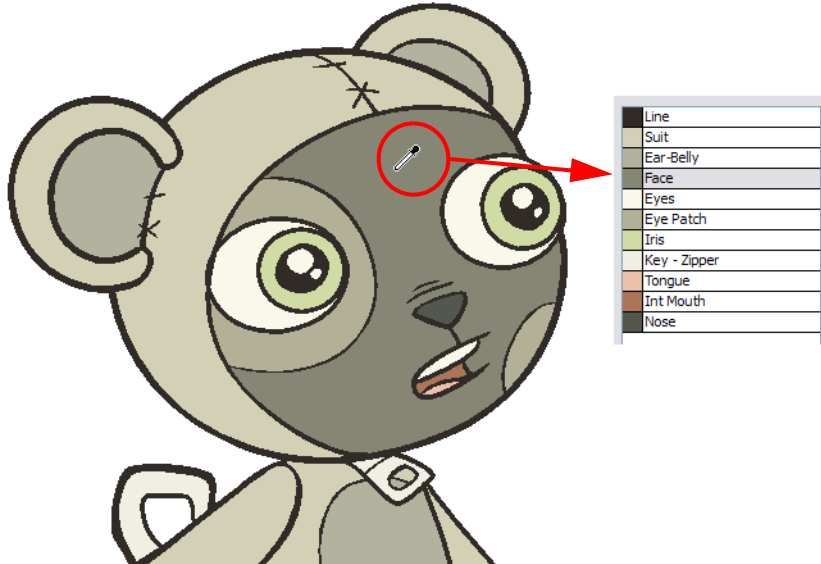


tool.

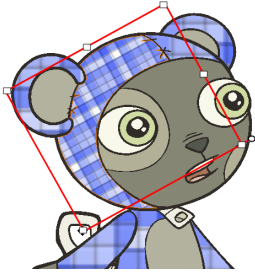
Once you select your colour on your drawing using the Dropper tool, the colour swatch will be automatically selected in the Colour Palette view.


### To use the Dropper tool:

1. In the Drawing Tools toolbar, select the Dropper  tool, under the Paint tool category. You can also select the Dropper tool from the top menu under **Tools > Drawing Tools > Dropper**.
2. In the Camera or Drawing view, click on the colour zone you want to select the colour from.



## Editing Gradients and Textures




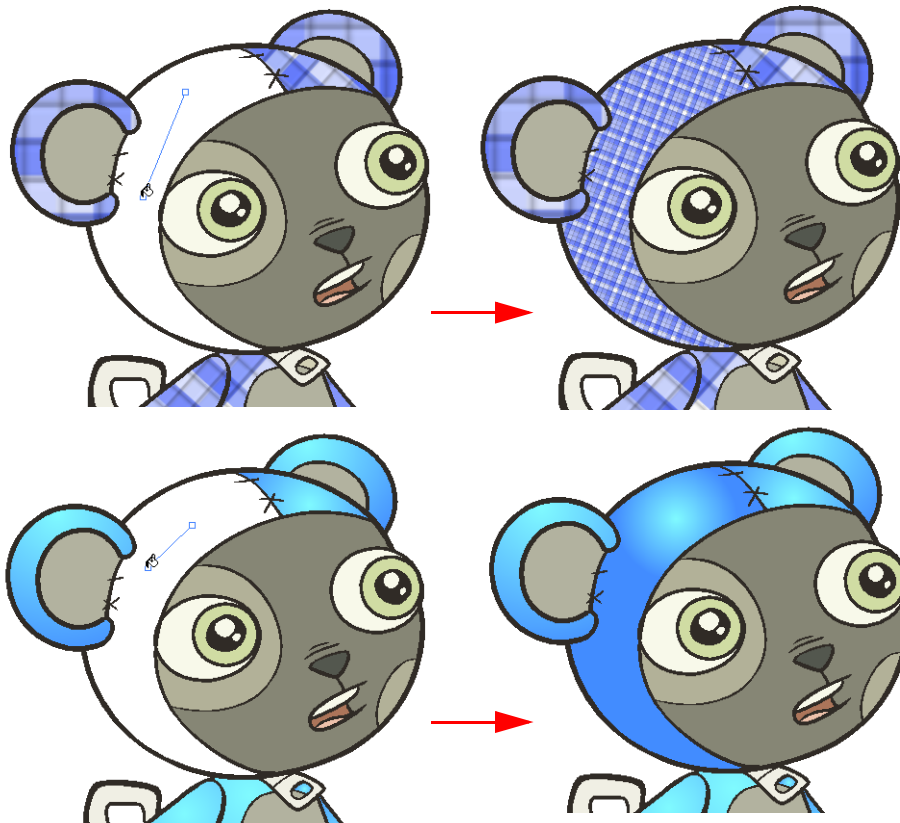
There are two ways to position your gradient and textures when you paint a drawing. You can do it when you paint with the Paint tool or afterwards using the Edit Texture  tool.

### Setting a Gradient or Texture with the Paint Tool

When you paint a zone with a gradient or bitmap texture colour swatch, you can position and orient the colour in the zone directly with the Paint tool by tracing a selection in the direction you want the gradient or texture to be.

**To set a gradient or texture with the Paint tool:**

1. In the Drawing Tools toolbar, select the Paint  tool. The default keyboard shortcut is [#]. You can also select the Paint tool in the top menu under **Tools > Drawing Tools > Paint**.
2. In the Colour Palette view, select a gradient or texture swatch.
3. In the Drawing or Camera view, click in the zone to be painted and drag a selection in the direction you want the gradient or texture to be. The length of your selection will also determine the size and centre of your texture or gradient.

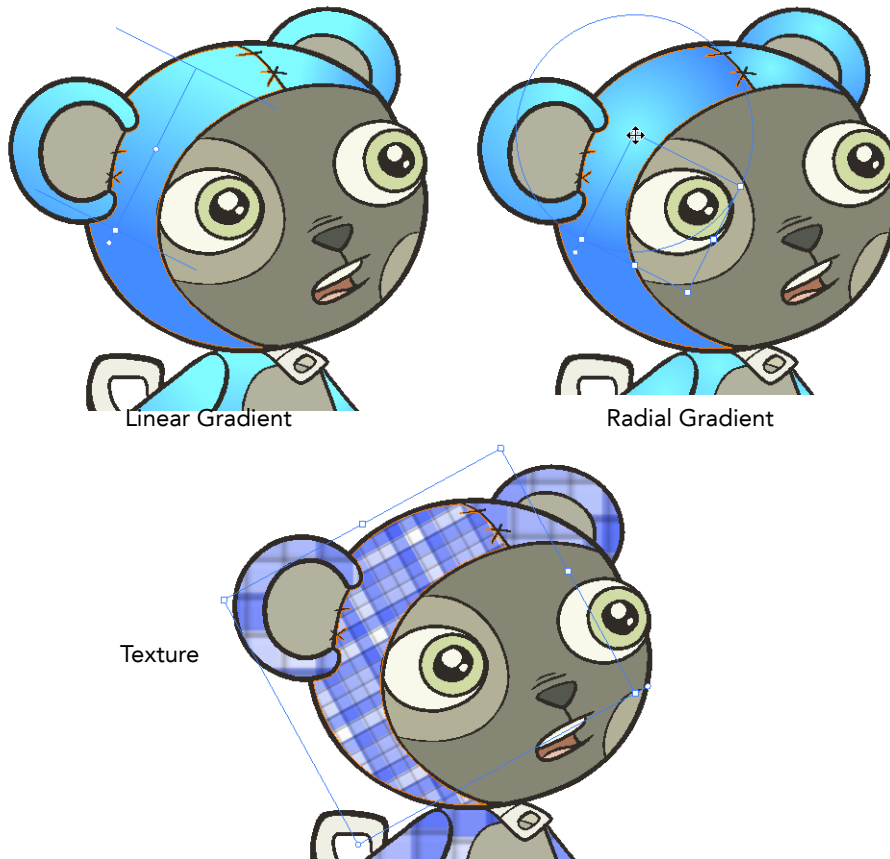


## Setting a Gradient or Texture with the Edit Texture Tool

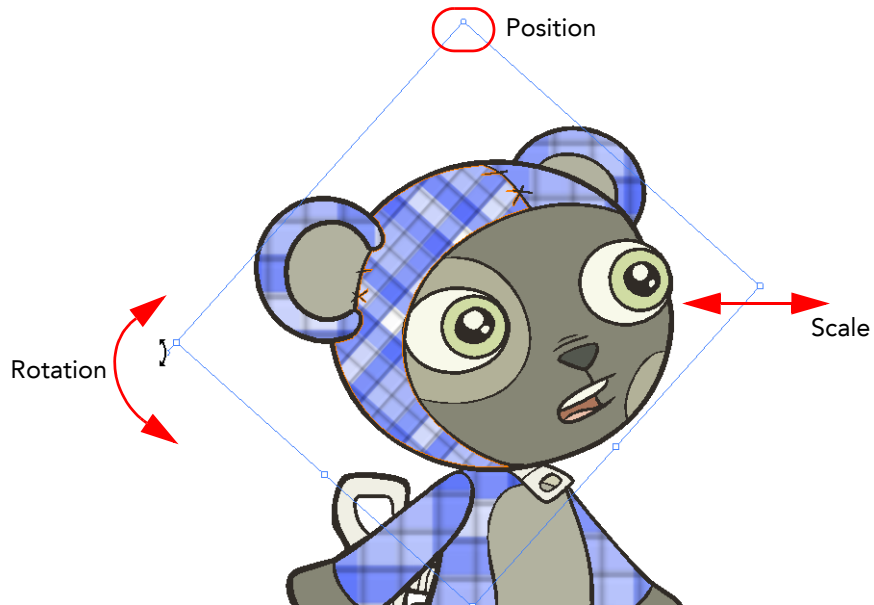
If you paint a zone with a gradient or texture colour you can use the Edit Texture tool to modify its position in the zone. You can move, scale, rotate and skew. If you have to match the colour to the animation, you can set the first texture position and copy the Edit Texture's position. When moving to the next drawing, you can select the next texture and paste the previous position to continue the modifications.

**To use Edit Texture tool:**

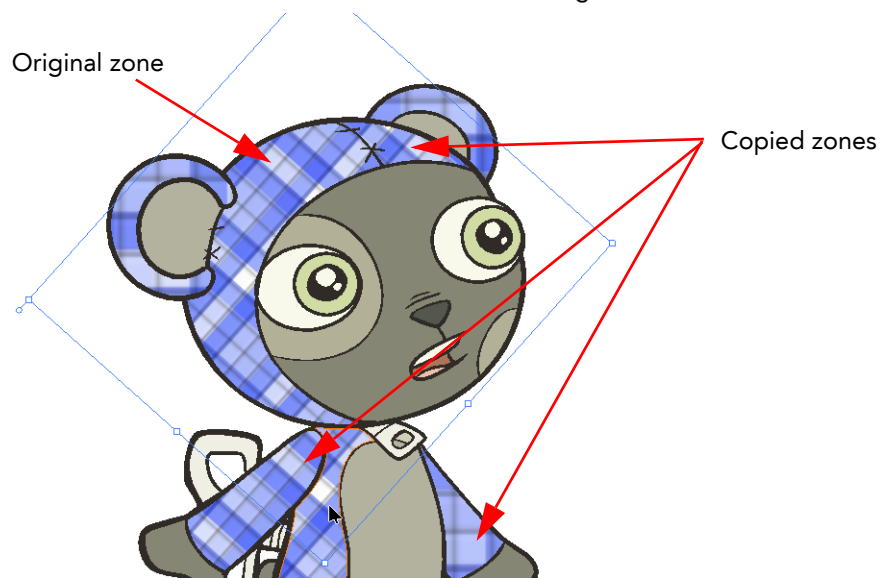
1. In the Drawing Tools toolbar, select the Edit Texture  tool under the Paint category. You can also select this tool from the top menu under **Tools > Drawing Tools > Edit Texture**.
2. Click on the Gradient or Texture zone to be modified.



3. Move the edit texture's anchor points to obtain the look you want.



- ▶ If the same modification needs to be applied to another gradient in another drawing or texture zone, you can select the modified zone and select **Edit > Copy**.
- ▶ Select the zone to be modified in the other drawing and select **Edit > Paste**.



## Palettes



Toon Boom Studio uses colour palettes to add colour to your project.

The idea behind a colour palette is to create a set of colours for each character, object or background that you will reuse each time you have a new drawing to paint. If you create a teddy bear character, you will create a teddy bear colour palette that you will use each time that character appears in your project.

You will not use that teddy bear palette to paint a bedroom background or a doll. You would create new palettes specifically for each of those. This way, colours never get mixed up and your character is always the same colour scheme. It also makes your work more organized.

Using a colour palette has many benefits, including:

- Characters consistently retain dedicated colours
- You cannot accidentally use a colour which is not in the palette
- Standardization and colour consistency throughout the project
- The results are repeatable, no matter who uses the colour palette

A palette is created by assigning a set of colours to each character, prop or effect. You will create a new palette and add a new colour, known as a colour swatch, for each zone on the character, such as the skin, hair, tongue, shirt, pants, etc.


This topic is divided as follows:

- [Creating a Colour Palette](#), on page 133
- [Deleting a Colour Palette](#), on page 134
- [Duplicating a Colour Palette](#), on page 135
- [Creating a Palette Style](#), on page 136
- [Assigning a Style](#), on page 137
- [Deleting a Style](#), on page 137
- [Mixing the Colours](#), on page 137
- [Exporting a Colour Palette](#), on page 139
- [Importing a Colour Palette](#), on page 139

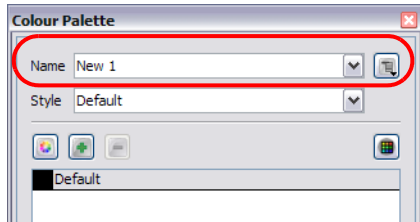
## Creating a Colour Palette

The first step in the palette process is to create a new palette. This way, you will not be using the default palette to paint all of your drawings.

**To create a new palette:**

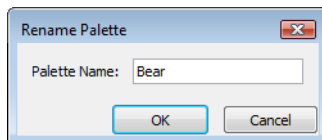
1. In the Colour Palette view, click on the Menu  button and select **Palette > New Palette**.

The new palette appears in the Colour Palette view.

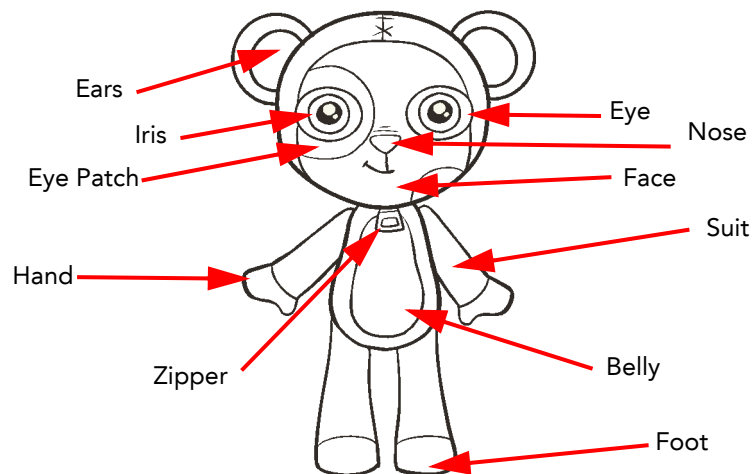


2. In the Colour Palette view, click on the Menu  button and select **Palette > Rename Palette**.

The **Rename Palette** dialog box opens.



3. In the Palette Name field, type the new palette's name.
4. Click on the OK button.
5. Analyze the character or background you want to create this palette for and list all the colour swatches you will need to paint it.



6. Add the colour swatches needed.



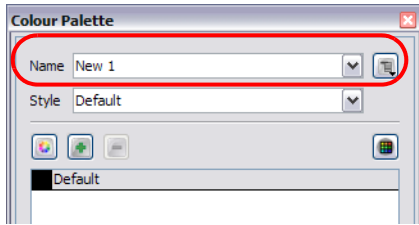
*Refer to the Adding a Colour Swatch topic to learn more about adding colour swatches.*

## Deleting a Colour Palette

You can remove palettes from your Palette list if they are not needed in your scene.

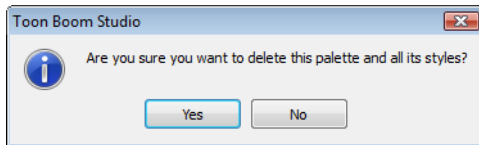
### To delete a palette:

1. In the Colour Palette view, select the palette to remove.



2. In the Colour Palette view, click on the Menu  button and select **Palette > Delete Palette**.

A Warning dialog box opens to confirm the operation.



3. Click on the OK button to delete the palette.
  - ▶ If the palette was in use in your scene, the zones painted with its colours will turn red.





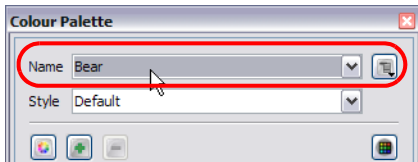
## Duplicating a Colour Palette

If you have two characters using similar colours and colour pots, you can use the Duplicate palette option to copy the existing palette and modify the new one instead of creating a new palette from scratch. This saves time creating new colour swatches and renaming them.

**NOTE:** The original and the duplicate palettes are completely independent. Once a palette is duplicated, you can change whatever you want in it without affecting the first one and vice-versa.

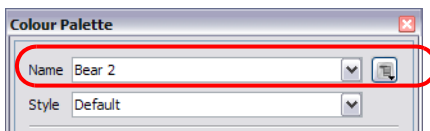
### To duplicate a palette:

1. In the Colour view, select the palette to be duplicated.



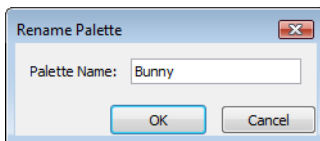
2. In the Colour Palette view, click on the Menu  button and select **Palette > Duplicate Palette**.

The new palette appears in the Colour Palette view.



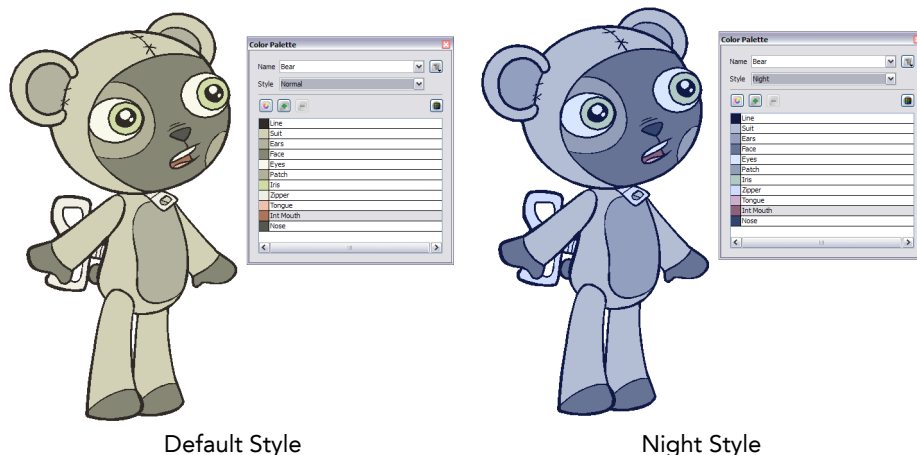
3. In the Colour Palette view, click on the Menu  button and select **Palette > Rename Palette**.

The **Rename Palette** dialog box opens.



4. In the Palette Name field, type the new palette's name.
5. Click on the OK button.

## Creating a Palette Style



Default Style

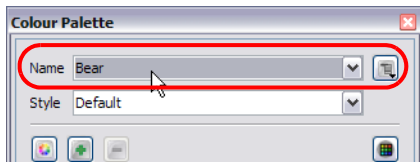
Night Style


A character usually has one colour palette, although there are times when the characters are placed in different lighting conditions and require a different colour shading. The night palette is a popular choice when a scene or sequence changes from day to night. It can be difficult and time-consuming to repaint everything and creating two independent palettes can be quite complex. As an alternative, you can create a palette style.

The palette style is a copy of the main palette. The colours in each palette have the same properties. The colours have the same identification number pointing to the same colour painted zones, the same names, but the swatches can be different colours. Depending on the selected style (night or day), the painted drawing will update. There is no need to repaint the animation, only to create or import a clone palette (palette style).


### To create a palette style:

1. In the Colour Palette view, select the palette you want to create a new style for.

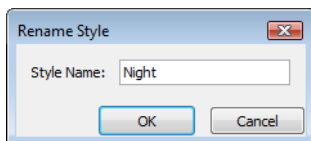


2. In the Colour Palette view, click on the Menu  button and select **Style > Duplicate Style**.

The new style appears in the Style list.

3. In the Colour Palette view, click on the Menu  button and select **Style > Rename Style**.

The **Rename Style** dialog box opens.



4. In the Palette Name field, type the new palette's name.
5. Click on the OK button.

In the Colour Palette view, you can modify the colours individually by using the Colour Picker window or all at once using the Tint Panel window.



*Refer to the [Mixing the Colours](#) topic to learn how to modify your palette style's colours.*

## Assigning a Style

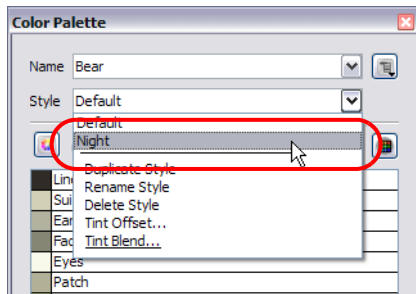
Once you paint a character with a palette, you may want to assign a different style to it. **NOTE:** The style will be used for the entire length of the scene. You cannot use two different styles in one scene. Although, you can use a different style for each scene in the project.



Refer to the *Planning Your Project* topic in the *Starting Your Project* chapter to learn how to create scenes.

### To select a palette style:

1. In the Colour Palette view, open the Style drop-down menu and select the palette style to use for the current scene.

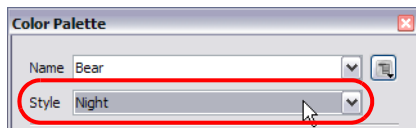



## Deleting a Style

If a style is not needed anymore, you can delete it from the Style list.

### To delete a palette style:

1. In the Colour Palette view, select the palette you want to delete a style from.



2. In the Colour Palette view, click on the Menu  button and select **Style > Delete Style**.

The zones painted with the current styles will now be painted with the default style.

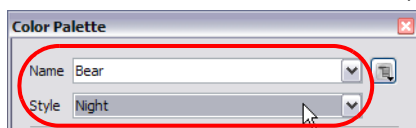
## Mixing the Colours


If you want to modify a series of colours at once to blend a tint in them or offset their colour, you can use the Tint Blend or the Tint Offset panels. These panels are quite useful when creating palette styles such as “night” and “day” styles.

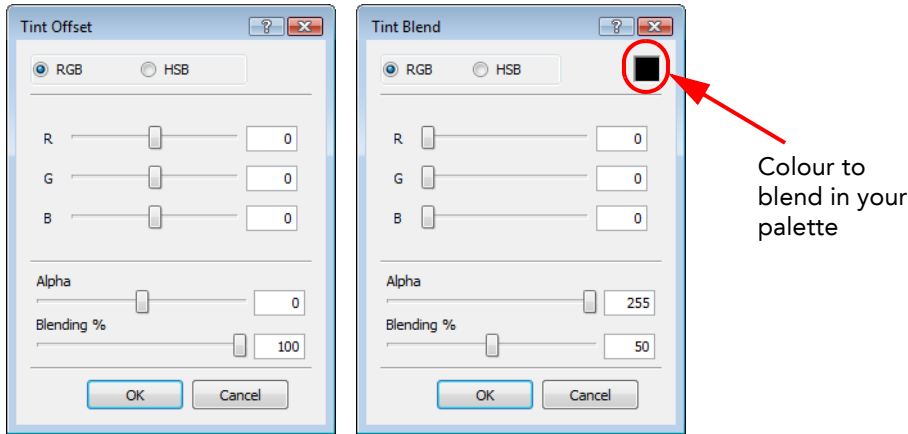
The Tint Offset panel will take all the current colours in your palette and change their tints. The Tint Blend panel will take a selected colour and will apply it over your current colours.

### To mix colours:

1. In the Colour Palette view, select the palette and the style to offset or blend the colours for.

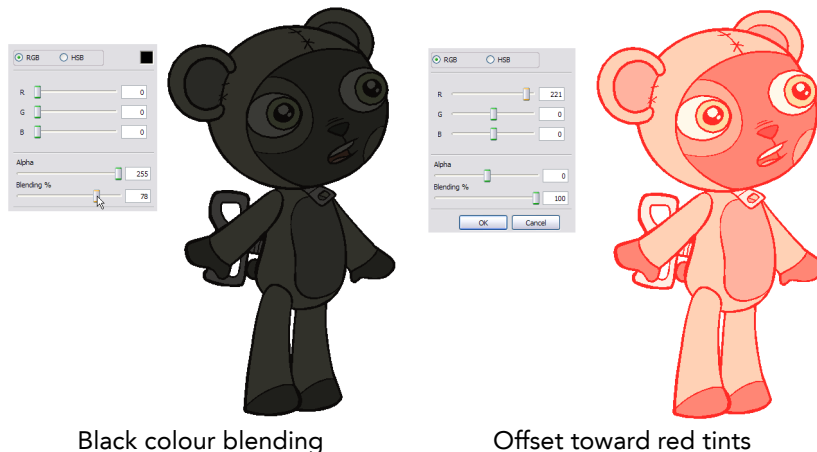


- In the Colour Palette view, click on the Menu  button and select **Style > Tint Offset** or **Tint Blend**. The **Tint Offset** or the **Tint Blend** panel opens.



- To modify your colours:
  - In the Tint Offset panel, slide the Red (R) slider to the right to increase the amount of red in your palette. Slide it to the left to remove the amount of red in your palette. You can do the same with the Green (G) and Blue (B) sliders.
  - In the Tint Blend panel, slide the Red (R) slider to the right to increase the amount of red in the colour to blend in your palette. Slide it to the left to remove the amount of red in the colour to blend in your palette. You can do the same with the Green (G) and Blue (B) sliders.
  - If you select the HSB mode rather than the RGB mode to modify your colours, you can modify the colour the same way by sliding left or right the Hue (H), Saturation (S) and Brightness (B) sliders. Those are simply two different ways of selecting a colour. Some people are more comfortable modifying colours by changing the Red, Green and Blue amounts and others are more comfortable changing the Hue, Saturation and Brightness values.
  - If you want your colours to become semi-transparent or your semi-transparent colours to become opaque, slide the Alpha (Transparency) slider left or right to increase or decrease the transparency level.
  - Finally, increase or decrease the Blending amount to indicate how strong the blending or offset of the colours should be.

If you blend a colour in your palette, the blending amount will progressively turn all your colours into that same colour. If you offset your colours, all the colours will progressively change to another tint, but they will not necessarily end up all the same colour.



Black colour blending

Offset toward red tints

- Click on the OK button.

## Exporting a Colour Palette

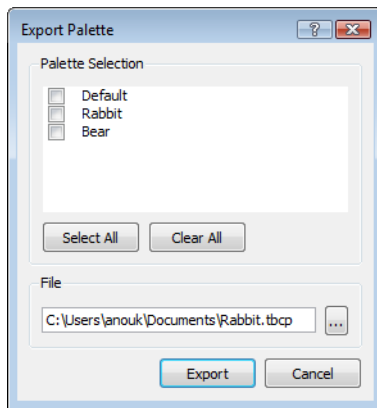
When you work on a project, you should create a backup for your palettes. Since you can modify all the colours throughout the whole project, exporting your palettes once they are final and keeping them in an external folder.

Also, it is quite possible that you will reuse your characters in other projects and you will want to reuse the colour palettes you already created instead of recreating them. You simply need to export your palette from the previous project and import it in the new one.

**To export a palette:**

1. In the Colour Palette view, click on the Menu  button and select **Palette > Export Palette**.

The **Export Palette** dialog box opens.



2. In the Palette Selection section, select the palettes you want to export.
3. In the File section click on the Browse button and select the location where to save your backup palettes.
4. Click on the Export button.

## Importing a Colour Palette

If you created a palette in another project and you would like to import it in your current project, you can browse for the palette file on your computer and add it to your project. When the palette is imported in your scene, the file is copied in the project's directory. It is not linked to the original file.

**To import a palette into your project:**

1. In the Colour Palette view, click on the Menu  button and select **Palette > Import Palette**.

The Browser window opens.

2. Browse for a palette file located on your hard-drive.
3. Click on the Open button.

The palette appears in the Palette list.

## What's Next?

So far, you have learned about:

- Creating Colours
- Painting a Drawing
- Creating Palettes
- Creating Palette Styles
- Importing and Exporting Palettes

Next, you will learn about hand-drawn animation and the exposure sheet. You will also learn how to paint a series of drawings using most of the skills you learned in this chapter.

# Chapter 6 Importing Artwork



With Toon Boom Studio, you can import visual content such as images and movies that were created outside of the software.

In this chapter, you will learn about the following:

- Importing Bitmaps Images, on page 142
- Import Images With Keying, on page 147
- Importing Multi-layered PSD files, on page 150
- Importing AI and PDF files, on page 152
- Importing from Adobe Flash, on page 154
- Importing a Movie, on page 155
- Scanning Images, on page 157
- Capture, on page 159
- Library, on page 160
- What's Next?, on page 173

## Importing Bitmaps Images



Images can come in many different file formats. Some formats are able to preserve transparency or transparent layers. Toon Boom Studio supports the following formats: GIF, JPEG, JPEG 2000, PICT, SGI, BMP, PNG, PSD, TIFF, TGA, MacPaint, QuickTime, FlashPix.

In this section, you will cover the following topics:

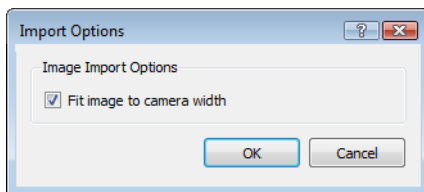
- Importing Bitmaps Without Vectorizing, on page 142
- Vectorization of an Image Element or Image Cell, on page 144
- Importing and Vectorizing Images, on page 145

### Importing Bitmaps Without Vectorizing

To import bitmaps:

1. Select **File > Import File**.  
The **Open** browser opens.
2. Browse for your bitmap image file and click on the **Open** button.

The **Import Options** dialog box opens.



3. In the **Import Options** dialog box, set the **Image Import Option**:
  - ▶ **Fit Image to Camera Width**  
By default this option is enabled, meaning that your image will be resized as to fit the width of the camera frame. You can disable this option to import the image at its original size.



Enabled



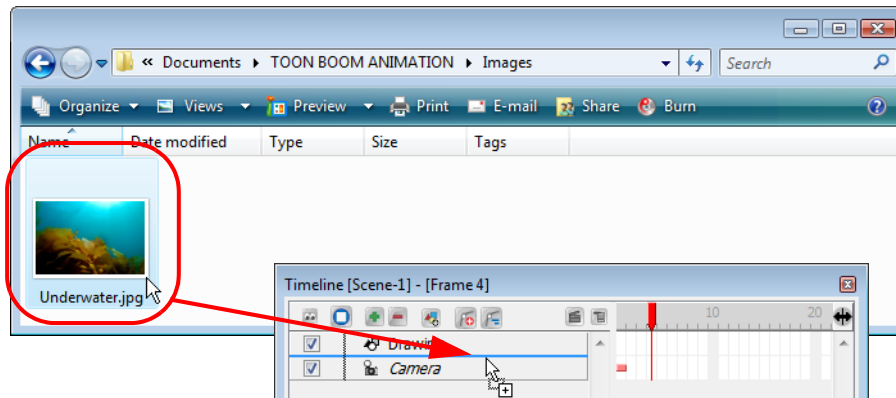
Disabled



- Click on the OK button.



You can also select a bitmap file directly from your operating system browser and drag it in the Camera, Drawing, Top, Side, Timeline or Exposure Sheet view.



- ▶ Follow step 3 and 4 from the To import bitmaps: step by step.

### Adding Images to a Bitmap Layer


Once you created a bitmap layer, it is possible to add more images inside it.

**To add an image element from the top menu:**

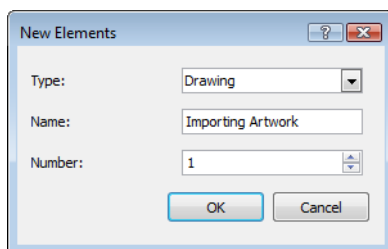
- Select **Element > Add > Image**.

The new image column is added to your scene.

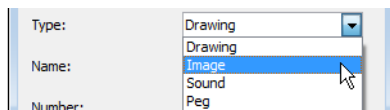
**To add an image layer from the Timeline view:**

- In the Timeline View toolbar, click on the Add Layer  button.

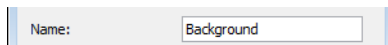
The **New Elements** dialog box opens.



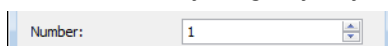
- Choose Image from the Type drop-down menu.



- Enter a name for your new image layer in the Name field.



- Choose how many image layers you want to add to your scene using the Number field.

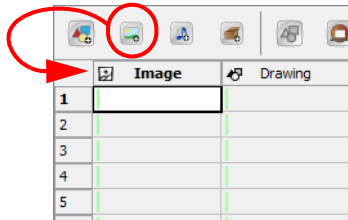


- Click on the OK button.

**To add an image element from the Exposure Sheet view:**

1. In the Exposure Sheet View toolbar, click on the New Image  button.

The new image element will be added to your scene.

**To add images to a bitmap layer:**

1. In the Timeline or Exposure Sheet view, select the cell into which you want to import the image.
2. Right-click (Windows) or [Ctrl]+click (Mac OS X) in the selected cell and select:
  - ▶ In the Timeline view: **Import Images > Import Images.**
  - ▶ In the Exposure Sheet view: **Import Images > From File.**

The **Open** browser opens.

3. Select the desired bitmap image file. You can select multiple image files if needed.
4. Click on the OK button.

The image will be imported in the selected cell.

## Vectorization of an Image Element or Image Cell

You can vectorize a bitmap after it has been imported to your project. You can either do this by using the Convert Element to Vector option or a regular Copy/Paste command.

**To vectorize bitmaps using the Convert Element to Vector option:**

1. In the Timeline view, select the cells containing the images you wish to convert into vectors:
  - ▶ Select specific cells in the right side of the Timeline view.
  - OR
  - ▶ Select the full Image element by clicking on it in the left side of the Timeline view.
2. Right-click (Windows) or [Ctrl]+click (Mac OS X) on a selected cell and select **Convert Element to Vector** from the pop-up menu.

The files are converted and a new Drawing element containing the vectorized files is created.

**To vectorize bitmaps using copy/paste command:**

1. In the Timeline view, select the cells containing the images you wish to convert into vectors:
  - ▶ Select specific cells in the right side of the Timeline view.
  - OR
  - ▶ Select the full Image element by clicking on it in the left side of the Timeline view.
2. Select **Edit > Copy** or use the keyboard shortcut [Ctrl]+[C] (Windows) or [⌘]+[C] (Mac OS X) to copy the cells.
3. In the Timeline view, select the destination of your copied image element or cells:
  - ▶ Select a cell in the Drawing element in which you want to paste your copied cells into.
  - OR
  - ▶ Select the entire Drawing element in which you want to paste your Image element into.
4. Select **Edit > Paste** or use the keyboard shortcut [Ctrl]+[V] (Windows) or [⌘]+[V] (Mac OS X).

Your cells will be copied and simultaneously converted into vectors.

## Importing and Vectorizing Images

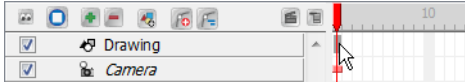
In Toon Boom Studio, you can import bitmap images and vectorize them.

### To import and vectorize bitmap images:

1. In the Timeline or Exposure Sheet view, click on the Add Drawing Element  button if you do not already have an empty drawing element in your scene.

The new drawing element is added to your scene.

2. In the Timeline or Exposure Sheet view, select an empty cell.



3. Right-click (Windows) or [Ctrl]+click (Mac OS X) in the empty cell and select **Import and Vectorize > From File** from the pop-up menu.

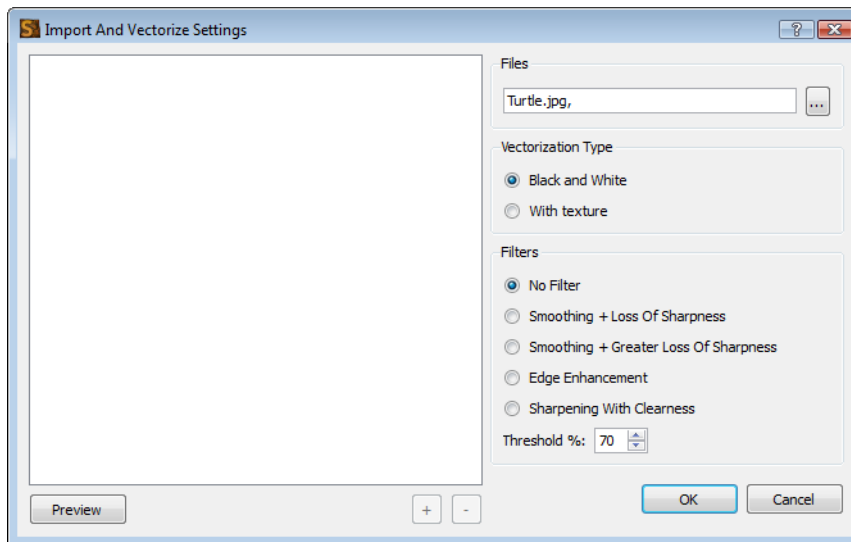
OR

From the top menu, select **File > Import and Vectorize > From File**.

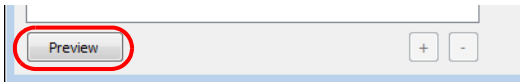
The **Open** browser opens.

4. Browse for and select the bitmap image file(s) you want to import and vectorize, and then click on the Open button. You can select multiple files if necessary.

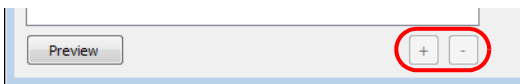
The Import and Vectorize Options dialog box opens.



5. Press on the Preview button to display your image in the preview space. Click on the Preview button every time you change the settings to update the result.



6. Click on the + and - buttons to zoom in and out in the preview space.



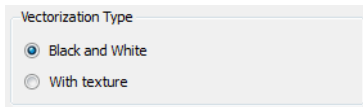
7. Set up the desired parameters:

#### ► Files

This field will display the image you selected to browse. You can click on the browse button to change your selection.



## ► Vectorization Types



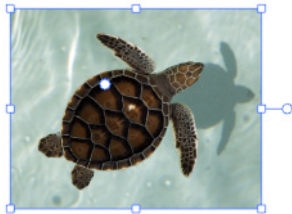
### ⇒ Black and White

This option will vectorize the images in black and white. This is used when vectorizing line art that can be coloured in Toon Boom Studio later. This makes use of the Filters options described later in this section.



### ⇒ With Texture

When the Vectorization type is set to With Texture, Toon Boom Studio imports the bitmap and applies it as a texture on a vector shape. This allows for direct manipulation of bitmap images within Studio.



## ► Filters



### ⇒ No Filter

This option vectorizes without applying a filter.

### ⇒ Smoothing + Loss Of Sharpness

This option smooths the image, this process will cause a loss of sharpness of the original image.

### ⇒ Smoothing + Greater Loss Of Sharpness

This option smooths the image, this process will cause a greater loss of sharpness of the original image than the option above.

### ⇒ Edge Enhancement

This option enhances the edge of the image, this will result in a more precise result.

### ⇒ Sharpening With Clearness

This options sharpens the images resulting in a more precise and clear result.

### ⇒ Threshold%

Adjust the threshold value. The greater the percentage, the more grey pixels will be allowed into the final vectorization of the line.

## Import Images With Keying



Keying is a concept used in animation but also in live action movies. Keying is the process of picking a precise colour value and removing it from the image to isolate a character or object. The more common use of keying is when filming actors against a green screen in cinema.

In Toon Boom Studio, you can import your images with the keying option, this lets you isolate an element in an image with a single coloured background.

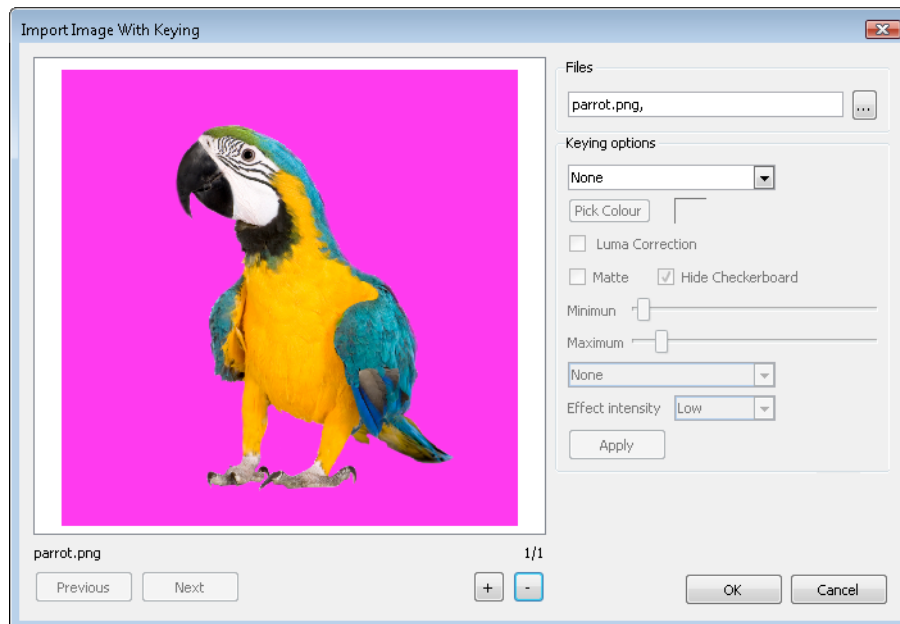
### To import images with keying:

1. In the Timeline view, select an empty cell in a bitmap image layer.
2. Right-click (Windows) or [Ctrl]+click (Mac OS X) and select **Import Images > Import Images With Keying**.

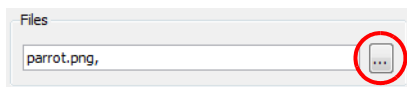
The Open Browser opens.

3. Browse to select the images you want to import and key. Hold down the [Shift] key while selecting your images to make a multiple selection.

The **Import Images With Keying** dialog box opens.



- ▶ In the Files section, click on the Browse button if you want to change the selected images.



- ▶ If you selected many image files, you can use the Previous and Next button to display the other drawings. The name of the currently selected drawing is displayed above the buttons.

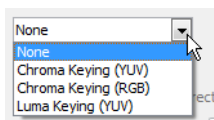


- ▶ Use the + and - buttons to zoom in or out of the Preview area. Above the buttons is displayed the total number of drawings loaded in the Import Images With Keying dialog box.



4. In the Keying Options section, set the keying parameters:

- ▶ In the Keying Type drop-down menu, select the keying type you want to use.



⇒ None

Selecting the None option means that there will be no keying on this drawing. Selecting None will render the other parameters grayed out.

⇒ Chroma Keying (YUV)

This option will make the pixels corresponding to the selected colour transparent, using the YUV channels.

⇒ Chroma Keying (RGB)

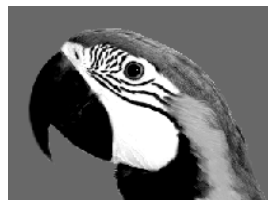
This option will make the pixels corresponding to the selected colour transparent, using the RGB channels.

⇒ Luma Keying (YUV)

With this option, you can set different levels of transparency on your drawing. The level of transparency will be determined by the different levels of colours, where white colour will be completely transparent and black colour completely opaque.



Chroma Keying Resulting Matte



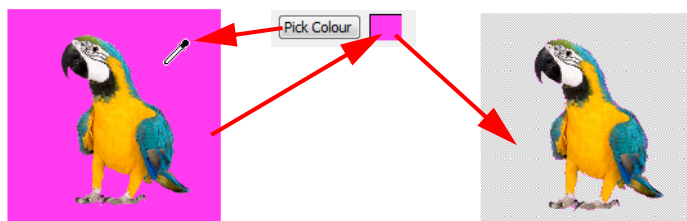
Luma Keying Resulting Matte

• **Pick Colour**



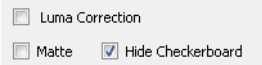
When you select one of the two Chroma Keying types from the drop-down menu, this option becomes available.

- ⇒ Click on the Pick Colour button to change your cursor to a dropper and select the background colour of your picture you want to illuminate from the preview area. As soon as you click on a colour, this colour will be displayed in the colour swatch and will be removed from the preview area. A grey checkerboard will be displayed to represent the transparent area.



- ⇒ You can also click on the colour swatch to open the **Select Colour** dialog box and select a precise colour from there.

- **Matte, Luma Correction and Hide Checkerboard**



- ⇒ **Matte**

Click on this option to display the matte in the preview area.



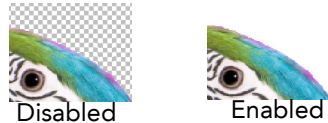
- ⇒ **Luma Correction**

Click on this option to apply a luma correction filter on your image.

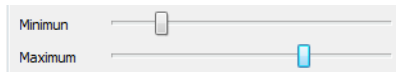


- ⇒ **Hide Checkerboard**

By default Studio displays a checkerboard pattern in the preview area to represent the transparent zones. You can enable the Hide Checkerboard option to conceal the checkerboard pattern and display the zone as white.



- **Minimum, Maximum sliders**



Use these sliders to adjust the minimum and maximum level values to be considered in the keying process following your parameters set above. You can see the result in the preview area.

- **Filter drop-down menu**

Use this drop-down menu to select an effect to be applied on your keying selection to make it more precise and use the Effect Intensity drop-down menu to choose the level of intensity desired.



- ⇒ **None:** No filter will be applied to your keying selection.

- ⇒ **Gaussian:** A gaussian blur effect will be applied to your selection to soften the edge of the keyed selection.

- ⇒ **Mean:** A mean filter will be applied to your selection to soften the edge of the keyed selection with a minimum of blurry result.

- ⇒ **Erode:** The edge of the keyed selection will be cropped following the effect intensity level chosen below.

- ⇒ **Dilate:** The edge of the keyed selection will be increased following the effect intensity level chosen below.

- ⇒ **Distance:** The edge of the keyed selection will be increased with a blur following the effect intensity level chosen below.

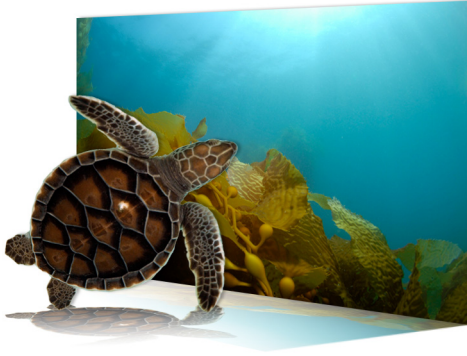
- **Apply button**



Click on the Apply button if you need to apply multiple passes of keying. Once you set up your first keying pass values and options, press on the Apply button. You are now ready to set up your next keying pass.

5. Click on the OK button.

## Importing Multi-layered PSD files



In Toon Boom Studio you can import bitmap images. You can also import multi-layered Adobe Photoshop \*.psd (version 4 or higher) file and retain their layering. When you enable the option during the import, Studio creates an image element for every layer contained in the PSD file.

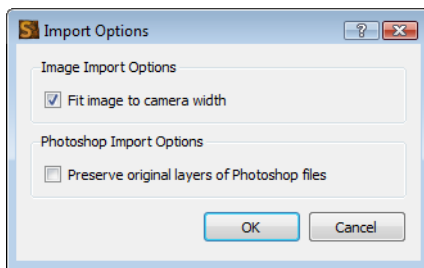
### To import multi-layered PSD files:

1. Select **File > Import File**.

The Open browser opens.

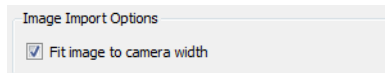
2. Browse for your multi-layered PSD image file and click on the Open button.

The **Import Options** dialog box opens.



3. In the Import Options dialog box, set the Image Import Option:

#### ► Image Import Options

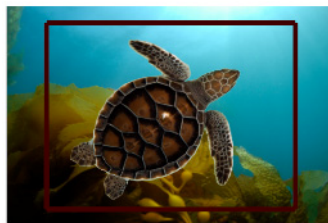


⇒ Fit image to camera width

By default this option is enabled, meaning that your image will be resized to fit the camera width frame. You can disable this option to import the image at its original size.



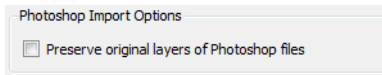
Enabled



Disabled

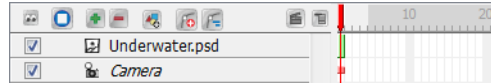


► **Photoshop Import Options**

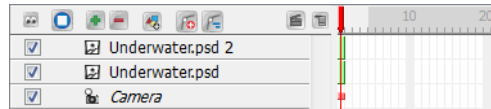


⇒ Preserve original layers of Photoshop files

By default this option is disabled, which means that when you import the PSD file, the layers will be flattened to create a single image element in your scene.



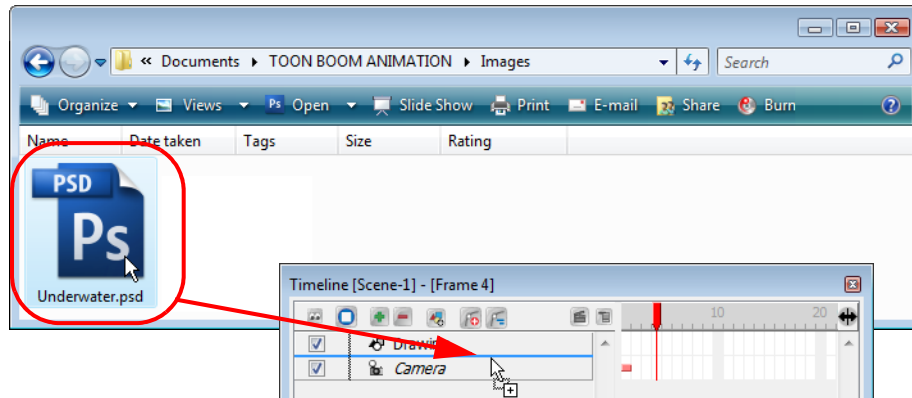
⇒ You can enable this option to preserve the PSD file layering, which will create a different image element for each layers contained in your Adobe Photoshop file.



4. Click on the OK button.



You can also select a PSD file directly from your operating system browser and drag it in the Camera, Drawing, Top, Side, Timeline or Exposure Sheet view.



Then, follow step 3 and 4 from the To import multi-layered PSD files: step by step.

## Importing AI and PDF files



In Toon Boom Studio as well as being able to import bitmap images, you can also import a vector-based Adobe Illustrator or PDF file and preserve its layering. When you enable the option during the import, Studio will create a drawing layer for every layer contained in the AI file or create a drawing layer and separate drawing frames for each page contained in the PDF file.

Toon Boom Studio supports Adobe Illustrator files from version 5. You must create a PDF compatible file when you save Adobe Illustrator CS files to be able to import them into Toon Boom Studio.

When you import an Adobe Illustrator or PDF file, Toon Boom Studio:

- Converts CMYK colours to RGB.



*You can convert the colour space of your Adobe Illustrator or PDF files when you save them. See Adobe Illustrator documentation for instructions. However, to ensure the colour results you want, you should develop your web colours 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 colour 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.

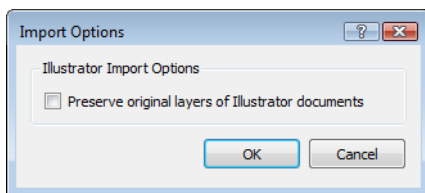
**To import multi-layered AI or PDF files:**

1. Select **File > Import File**.

The Open browser opens.

2. Browse for your AI or PDF image file and click on the Open button.

The **Import Options** dialog box opens.



3. In the Import Options dialog box, set the Image Import Option:

▶ **Preserve original layers of illustrator documents**

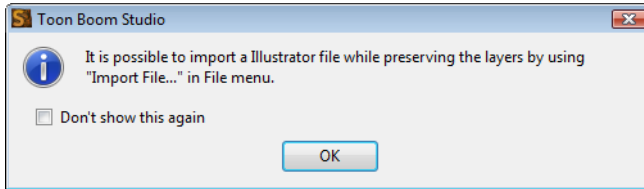
- ⇒ By default this option is disabled, which means that when you import the AI or PDF file, the layers and the pages will be flattened.
- ⇒ Enable this option to preserve the Adobe Illustrator file layering, which will create a different drawing for each layer contained in your AI file.

4. Click on the OK button.

**To import an AI or PDF file in an already existing drawing layer:**

1. In the Timeline or Exposure Sheet view, select a cell in the drawing layer into which you want to import the image.
2. Right-click (Windows) or [Ctrl]+click (Mac OS X) in the selected cell and select **Import Illustrator**.  
The **Open** browser opens.
3. Select the desired AI or PDF file. You can select multiple image files if needed.
4. Click on the OK button.

An information dialog box opens, notifying you that the layers will not be preserved but that you can use the **File > Import File** command to import your files and preserve its layers.



5. Click on the OK button.  
The image will be imported in the selected cell.

## Importing from Adobe Flash



If a project was started in Adobe Flash you can add more dimension to it by adding multiplane camera movements or effects to it. Although \*.fla files are not supported, you can export your Flash project to \*.swf movies and imported them into Studio.

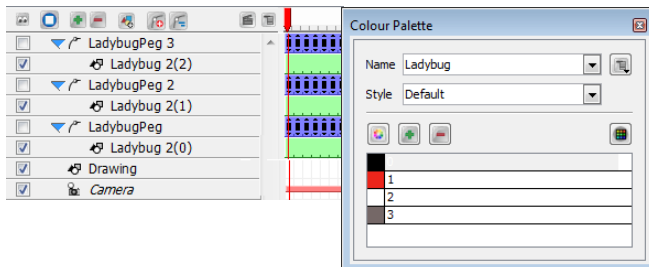
When you import an SWF file into your scene, its contents are expanded and laid out as a collection of elements. Pegs are automatically created to manage any scaling, rotation or motion animated in the file.

A new palette is automatically created, it is given a name corresponding to the movie file. This palette contains all the colours in the movie.

### To Import an SWF movie:

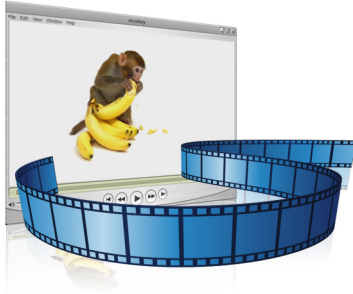
1. Select **File > Import File**. The Open browser opens.
2. Browse for your video file and click on the Open button.

The video appears in the Timeline view. Each of the SWF elements has its own drawing layer which is connected to pegs if there is a motion. A palette is also created in the Colour Palette view.



You can import SWF files as template from the Library view and link SWF files into Media Elements. Refer to the *Importing Multimedia files into the Library view* and *Linking Templates to Media Elements* topics to learn more.

## Importing a Movie



There are several reasons why you might need to import a movie into your animation project, to create a rotoscope animation, to add 2D animation to a live video or to incorporate a television showing a program inside your scene.

Toon Boom Studio allows you to import several movie types into your project:

- AVI
- MP4
- MPG
- QuickTime



You can also import a SWF movie file. Refer to the *Importing from Adobe Flash* topic to learn how.

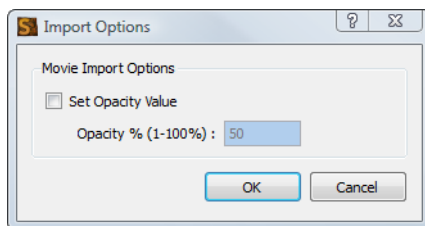
## Importing a Bitmap Movie File

AVI, MP4, MPG and QuickTime movies have one thing in common, they are all bitmap movie files. When they are imported inside Studio, a bitmap image sequence is created.

**To import a AVI, MP4, MPG or QuickTime movie:**

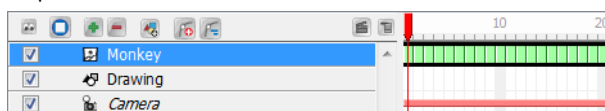
1. Select **File > Import File**.  
The Open browser opens.
2. Browse for your video file and click on the Open button.

The **Import Options** dialog box opens.



3. In the Import Options dialog box, set the Movie Import Options:
  - ▶ **Set Opacity Value**  
Sometimes you want to import a movie as a reference and you would like it to have a specific transparency value. Enable this option to edit the opacity value of the movie.
  - ▶ **Opacity% (1-100%):**  
When the Set Opacity Value option is enabled, the Opacity% field becomes available. Type in the desired Opacity% value from 1 to 100.
4. Click on the OK button.

The video will appear on its own image layer in the Timeline and Exposure Sheet view as a bitmap image sequence.



## Importing a Movie in an Existing Image Layer

You can import a bitmap movie file in an already existing image layer.

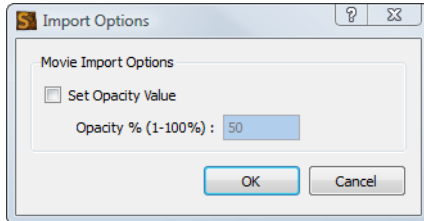
### To import a movie as an image sequence:

1. In the Timeline or Exposure Sheet view, select the cell at which you want your movie to start playing.
2. Right-click (Windows) or [Ctrl]+click (Mac OS X) in the cell and select Import Movie File as Image Sequence from the pop-up menu.

The **Open** browser opens.

3. Browse for your movie file and press on the Open button.

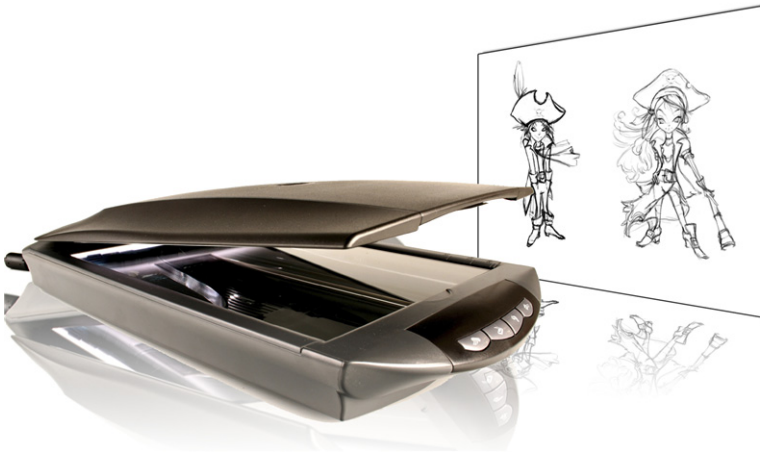
The **Import Options** dialog box opens.



4. In the Import Options dialog box, set the Movie Import Options:
  - ▶ **Set Opacity Value**  
Sometimes you want to import a movie as a reference and you would like it to have a specific transparency value. Enable this option to edit the opacity value of the movie.
  - ▶ **Opacity% (1-100%):**  
When the Set Opacity Value option is enabled, the Opacity% field becomes available. Type in the desired Opacity% value from 1 to 100.
5. Click on the OK button.

The image sequence will appear in the image layer at the selected starting cell.

## Scanning Images



Rather than importing images from files, you can use Toon Boom Studio to get images from any TWAIN device (such as scanners and cameras). You can either load them as bitmaps into your scene or convert them into vector images that you can edit in Toon Boom Studio.



*You must install the TWAIN driver in order to access its contents. To get the latest TWAIN driver for your particular device you should refer to that manufacturer's website.*

### To select the device you want to use:

1. Do one of the following:
  - ▶ Right-click (Windows) or [Ctrl]-click (Mac OS X) a cell in an Image element in the Exposure Sheet or Timeline view and select **Import Images > Select TWAIN Source**.
  - ▶ Right-click (Windows) or [Ctrl]-click (Mac OS X) a cell in a Drawing element and select **Import and Vectorize > Select TWAIN Source**.

The Select Source dialog box opens.

2. Use the **Select Source** dialog box to select the device you want to acquire content from.
3. Click on the OK button.

### To scan or get a bitmap from a TWAIN device:

1. Select a cell in an Image element.
2. Right-click (Windows) or [Ctrl]-click (Mac OS X) in the cell and select **Import Images > From TWAIN**.

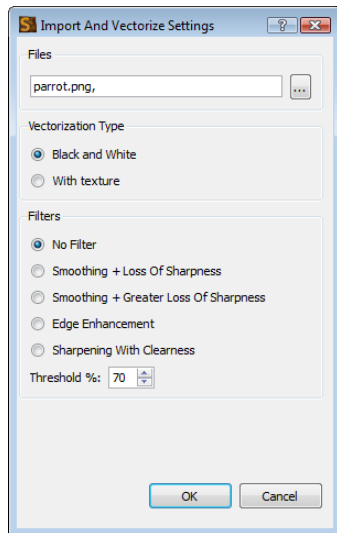
A dialog box with your device's options appears.

3. Use the options in this dialog box to set your parameters and then scan or load the drawings into Toon Boom Studio.

**To vectorize a bitmap retrieved from a TWAIN device:**

1. Select a cell in a Drawing element in the Exposure Sheet or Timeline view.
2. Right-click (Windows) or [Ctrl]-click (Mac OS X) the cell and select **Import and Vectorize > From TWAIN**.

The **Import and Vectorize Settings** dialog box opens.



3. Set your vectorization settings:
    - ▶ **Vectorization with texture** applies the bitmap as a texture on the drawing shape.
    - ▶ **Black and white vectorization** uses the filters listed below to transform the bitmap into vector art.
  4. Select a filter. You may have to experiment with these settings based on the qualities of the images you are vectorizing.
    - ▶ If the lines in your image are thin, select **Smoothing + Loss of Sharpness**. This filter blurs the lines in the image slightly so that thin lines are picked up in the vectorization process.
    - ▶ If the lines in your image are very fine, select **Smoothing + Greater Loss of Sharpness**. This filter blurs the lines in your image more so that more lines are transformed in the vectorization process.
    - ▶ If the lines in your image are thick, select **Edge Enhancement**. This filter merges fine lines (noise) into larger lines to create cleaner objects.
    - ▶ If the lines in your images 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 images. Noise can be dirt or faint smudges on your scanned images. For example, if your value is set to 70%, all colour values below 70% are converted to white and ignored in the final image.
  6. Click on **OK** to close the dialog box and continue the process.
- A dialog box with your device's options appears.
7. Use the options here to select your parameters and then load and vectorize the drawings into Toon Boom Studio.



*Refer to the [Importing and Vectorizing Images](#) topic to learn more about vectorization options.*



## Capture



In Toon Boom Studio, you can capture from a device such as a digital camera to create original stop-motion animation. Toon Boom Studio 6 has an integrated image capture feature. An intuitive and easy to use image capture window allows you to set up and capture all your images.



*Refer to the Stop-motion Animation chapter to learn how to capture images and create your own stop-motion animation project.*

# Library



You can share and reuse any elements you create in Toon Boom Studio templates. Studio has a library providing ready to use templates and where you can store several different elements you created such as puppets, backgrounds or animations. In fact, almost anything you create or use in Studio can be stored in the library.

In this chapter, you will learn about the following:

- Understanding the Library Concept, on page 160
- Library View, on page 161
- Structuring the Library, on page 163
- Templates, on page 165

## Understanding the Library Concept

Use the Library view to reuse your artwork and animation in other scenes.

This topic is divided as follows:

- What is a Library?
- What is a Template?

### What is a Library?

A library is a folder where you can store your Templates. You can access these folders from your different projects. To store your artwork in the Library, drag the content into the library and to reuse it, you will drag it into your Timeline view.

A library can be organized using subfolders, you can have several different library folders on your hard drive.

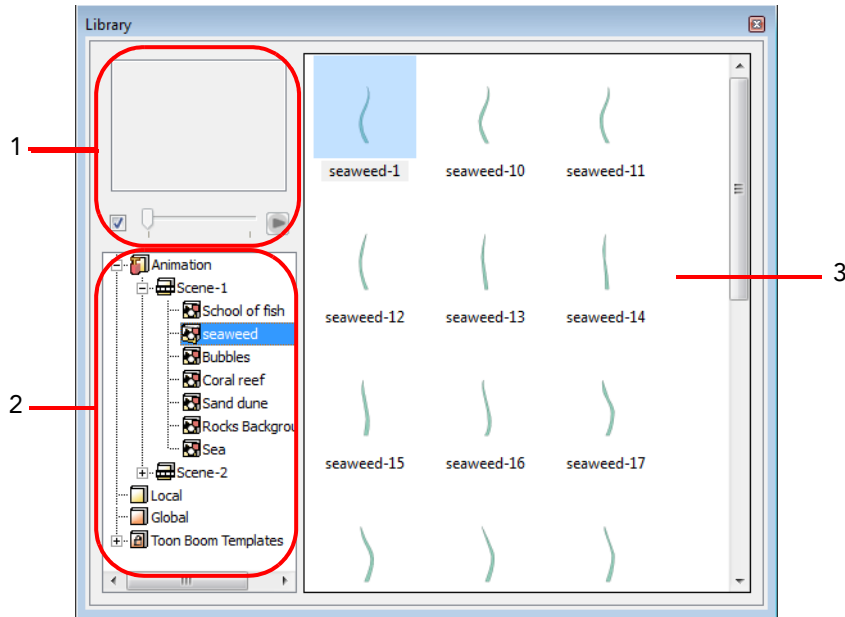
### What is a Template?

A template is a copy of the artwork stored in the library, this package can be reused in different scenes. Once a template is stored in the library it can be accessed from any project. Dragging a template into your scene copies the content in your Timeline and does not create a link it to the original. This individual copy can be modified at will.

You can create a template out of pieces of animation content, such as elements, drawings, images, or sounds or even collections of animation content such as drawings, images and sounds in one single template.

## Library View

The Library window is the centre for managing re-usable content in Toon Boom Studio.



The Library view is used to create and manage your templates, display the folders and manage all of the content.

1. Preview
2. Library List
3. Templates List

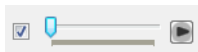
## Preview



You can use the Preview area to check the contents of the Library. You can preview any type of template. However, if your template consists of a peg or a camera element only, nothing is going to show in the preview window.

### To preview content in the library:

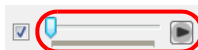
1. In the Library view, make sure that the preview checkbox is enabled.



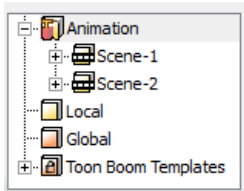
2. Select the template you want to preview:
  - ▶ In the Library list, select a Scene folder to display the entire scene in the preview area.
  - OR
  - ▶ In the Template list, double-click on the template you want to preview.

The preview will appear in the Preview area.

3. If there are multiple frames in the selected template or scene, click on the Play button to play it back. You can also use the slider to select the frame you want to see.



## Library List



The Library List is used to navigate through the different libraries and subfolders. You can also open, close and create new libraries from here.

The Library list contains four default Libraries:

- **Animation**  
In this library is stored all the elements and drawings contained in your project. This library is organized by scene and is constantly updated as you work in your project.
- **Local**  
In this library, you can store templates that you want to use in the current animation project. In your system, this library is stored in the **Template** folder inside of your project main folder.
- **Global**  
In this library, you can store templates that you want to be able to use in any project animation that you create on your computer.
- **Toon Boom Templates**  
This library stores templates provided by Toon Boom Studio. Here you can find a lot of interesting artwork organized in subfolders, also called catalogs, by categories such as Backgrounds, Storyboarding, Props, Characters, Cut-out Characters, Clip Arts and Special Events. You can not edit this library.

## Template List



The templates contained in the selected Library list are displayed on the right side of the Library view as thumbnails, as a list or as details.

**To change the templates list display:**

1. In the Library view's right side, right-click (Windows) or [Ctrl]+click (Mac OS X) and select **View > List, Thumbnails** or **Details**.

## Structuring the Library

As you might need to create many templates you will soon realize that they need to be organized. You can create different libraries and catalogs so that you can have easy access to your assets.

For example, in your global library, you can create a different library for each project and divide it into several categories, such as:

- Characters
- Props
- Backgrounds

This topic is divided as follows:

- Creating a Library, on page 163
- Opening and Closing a Library, on page 164
- Creating a Catalog, on page 164
- Renaming a Catalog, on page 165
- Deleting a Catalog, on page 165
- Refreshing the Library, on page 165
- Reloading Default Templates, on page 165
- Saving the Library, on page 165

## Creating a Library

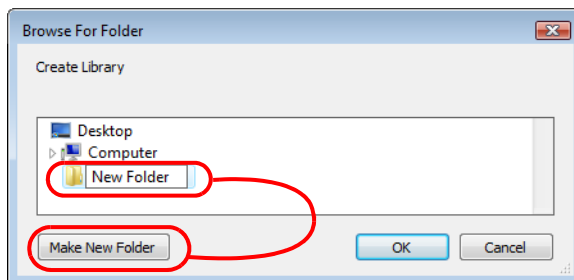
You can create libraries in the Library view.

**To create a library:**

1. In the Library list, right-click (Windows) or [Ctrl]+click (Mac OS X) and select **Create Library**.

The Browser window opens.

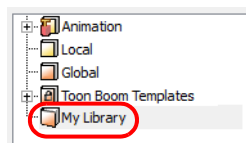
2. Browse for the location where you want your new library to be stored.
3. Click on the Make New Folder button.



4. Give a relevant name to your new library and click on the OK button.



The new library appears in the Library list area.



**To rename a library:**

1. In the Library list, select the library you want to rename, right-click (Windows) or [Ctrl]+click (Mac OS X) and select **Rename Library**.  
The library name will become an editable field.
2. Rename the Library and press [Enter] to validate.

## Opening and Closing a Library

You can load libraries of templates that are stored on your computer or on another computer available through your network.

Libraries make it easier for you to work on productions with other users that will share the same templates. Toon Boom Studio identifies libraries with the extension `*.tbc`. To load a library, the folder must have a file with the `*.tbc` extension inside of it.

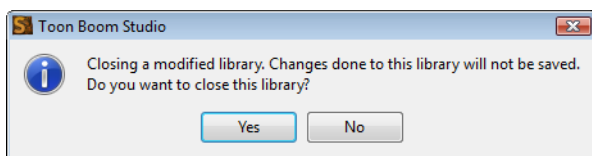
### To load and close a library:

1. Right-click (Windows) or [Ctrl]-click (Mac OS X) in the library list and select **Open Library** from the pop-up menu.  
A browser dialog box opens.
2. Locate the library you want to open and click the **Open** button.
3. The selected library appears in the library list.

### To close a library:

1. Select the library you want to close and right-click (Windows) or [Ctrl]-click (Mac OS X) the library and select **Close Library**.

If you have made changes to the library since you last saved the global library, a message appears asking you to confirm your desire to close the library.



- Click **Yes** to close the library without saving changes.
- Click **No** to keep the library open so that you can save changes.  
⇒ Select **File > Save Global Library** to save changes to the library.

## Creating a Catalog

Symbols and templates libraries need to be organized, you can create different subfolders in the Library view so that you can gain easy access to your assets. These subfolders are called catalogs.

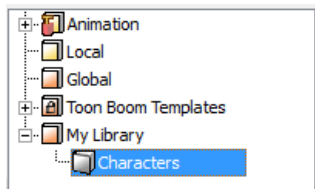
### To create a catalog:

1. In the Library view's left side, select the library to which you want to add a catalog.
2. Right-click (Windows) or [Ctrl]-click (Mac OS X) on the selected library and select **New Catalog** from the pop-up menu.

The new folder appears in the Library. When you have a library with catalogs, click on the [+] sign to expand it to make the catalogs visible.



3. Name the new catalog and press [Enter] to validate.



## Renaming a Catalog

### To rename a catalog:

1. In the Library list, select the catalog you want to rename, right-click (Windows) or [Ctrl]+click (Mac OS X) and select **Rename Catalog**.  
The catalog name will become an editable field.
2. Rename the catalog and press [Enter] to validate.

## Deleting a Catalog

### To delete a catalog:

1. In the Library list, select the catalog you no longer need, right-click (Windows) or [Ctrl]+click (Mac OS X) and select **Delete**.  
The catalog will be deleted.

## Refreshing the Library

Sometimes you might need to refresh the Template list to see the latest changes.

### To refresh the library:

1. In the Template list, right-click (Windows) or [Ctrl]+click (Mac OS X) and select **Refresh** from the pop-up menu.  
You can also use the default keyboard shortcut [F5].  
The Template list will be refreshed.

## Reloading Default Templates

If you close the Toon Boom Templates library, you can always quickly bring it back to the library list.

To reload the default Templates:

1. In the Library list, right-click (Windows) or [Ctrl]+click (Mac OS X) and select **Reload Default Templates**.  
The Toon Boom Templates library will be reopened.

## Saving the Library

When you save your Toon Boom Studio project, the library is automatically saved. You can also save only the changes made to the library without saving your Studio project.

### To save the library:

1. Select **File > Save Global Library**.

## Templates

If you want to reuse artwork and animation from your project into other scenes, you need to create a template out of it.

This topic is divided as follows:

- Creating a Template, on page 166
- Deleting a Template, on page 167
- Editing a Template, on page 167
- Template Properties, on page 169
- Importing Multimedia files into the Library view, on page 169
- Importing a Template in Your Scene, on page 170
- Linking Templates to Media Elements, on page 170
- Copying Selected Template Contents into Your Animation, on page 171
- Using Paste Special to Update Content from a Template, on page 172

## Creating a Template

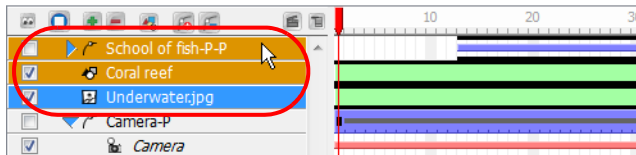
In Toon Boom Studio, creating a template is as easy as selecting what you want from the Exposure Sheet or Timeline view and dragging your selection into the Library view.

You can create templates from any piece of animation content:

- From the Exposure Sheet view, you can create templates from single or multiple images and drawings, or sounds.
- From the Timeline view, you can create templates from single or multiple layers, or from a selection of frames across multiple layers. You can store anything available in the Timeline view as a template.

### To create a template:

1. Make a selection of what you want to include in the template:
  - ▶ In the Timeline view, select some cells or layers.

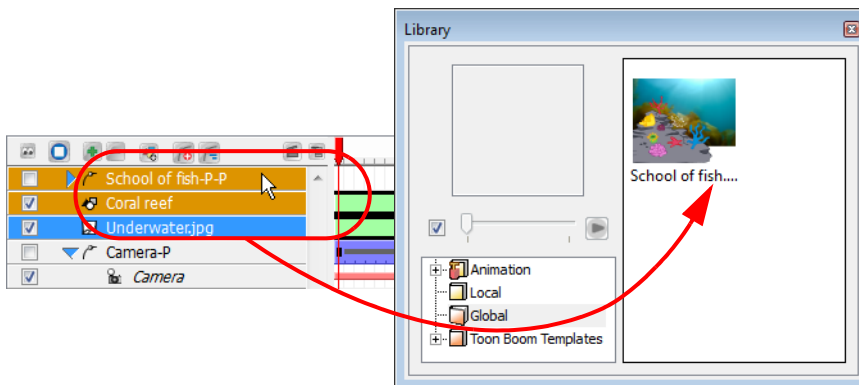


OR

- ▶ In the Exposure Sheet view, select some cells from one or multiple columns.

	seaweed(...)	seaweed(...)	seaweed(...)	seaweed(3)
1	seaweed-20	seaweed-14	seaweed-1	seaweed-3
2				
3	seaweed-4	seaweed-5	seaweed-10	seaweed-17
4				
5	seaweed-21	seaweed-15	seaweed-11	seaweed-18
6				
7	seaweed-22	seaweed-16	seaweed-8	seaweed-6
8				
9	seaweed-9	seaweed-3	seaweed-12	seaweed-19
10				

2. In the Library view, select the destination library or catalog from the library list.
3. Drag the current selection to the template list in the Library view.



You can drag a selection to any library or catalog folder icon in the library list and the template will be added to this library or catalog.

The template will be added to the template list.



- The name of the template will be shown as an active text field, type the desired name for your template and press [Enter] to validate.



#### To rename a template:

- In the Library view, select the folder containing the template to rename.
- Select the template you want to rename from the template list.
- Right-click (Windows) or [Ctrl]+click (Mac OS X) on the selected template and select **Rename Template** from the pop-up menu.
- Enter the new name in the active text field and press [Enter] to validate.  
The template will be renamed.

### Deleting a Template

You can easily delete templates from the Library view if you do not need them anymore. This action can be undone if necessary.

#### To delete a template:

- In the Library view, select the folder containing the template to delete.
- Select the template you want to delete from the template list.
- Right-click (Windows) or [Ctrl]+click (Mac OS X) on the selected template and select **Delete Template** from the pop-up menu. The default keyboard shortcut is [Delete].  
The template will be removed from the library.

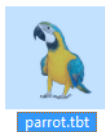
### Editing a Template

You can modify the templates contained in the Global, Local and any Library you created. A template is like a scene, you can open it and edit it as any regular project.

If you want to do some modifications in your templates, you can edit them using the Edit Template command.

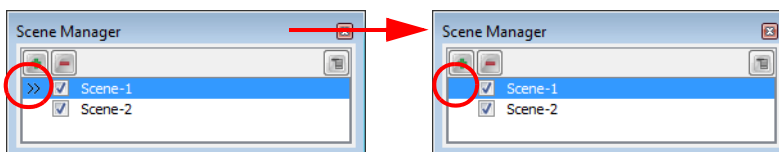
#### To edit templates:

- In the Library view, select the folder containing the template to modify.
- Select the template you want to edit from the template list.

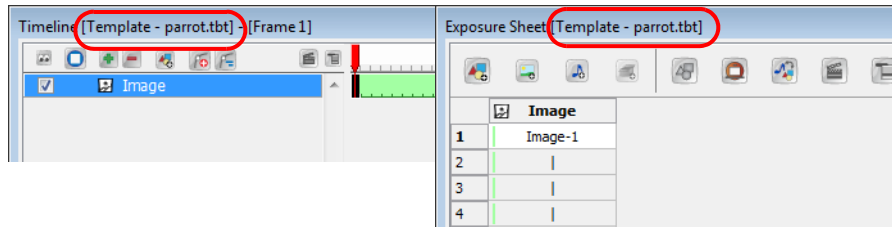


- In the Library window, right-click (Windows) or [Ctrl]-click (Mac OS X) on the selected template you want to edit and select **Edit Template** from the pop-up menu.

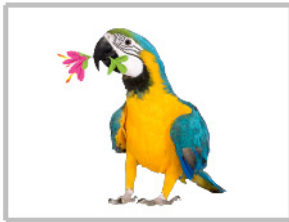
The identification of the active scene changes in the Scene Manager view.



The contents of the template you are editing appear in all views and the title bar on the Exposure Sheet and Timeline views changes to indicate that you are currently editing a template.



4. Now that you are in template editing mode, you can make any change you want to the contents of the template in any the views. You can adjust timing, add drawings, edit existing drawings or even add layers.



5. Save your template.
  - ▶ Select **File > Save** to save the changes to the local and global template, as well as the animation project.
  - ▶ Select **File > Save Global Library** to save the contents of the Library view only and not the animation project.
6. To exit the edit template mode, in the template list of the Library view, right-click (Windows) or [Ctrl]-click (Mac OS X) on the selected template and select **Return to Scene**. You can also double-click on the scene name in the Scene Manager view.
7. In the Library view, right-click (Windows) or [Ctrl]-click (Mac OS X) in the template list and select Refresh from the pop-up menu, or you can also press [F5], the default keyboard shortcut, to refresh the templates so that the thumbnail displays the latest changes.

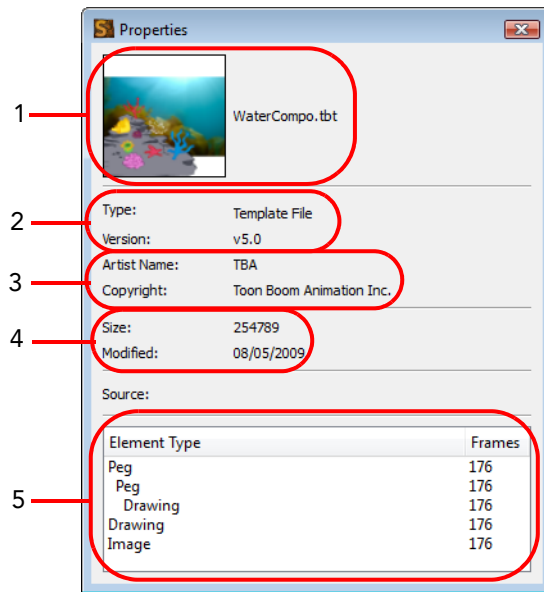


Refer to the *Refreshing the Library* topic to learn how to display your template as thumbnails.



## Template Properties

If you need more information about a template, you can view the template's properties. The template's properties shows the following information:



1. The name and a preview thumbnail of the template.
2. The template's type and version of Toon Boom Studio that was used.
3. The name of the artist who created the template and copyright information.
4. The size of the template and the date of the latest modification.
5. The contents of the template and their duration.

### To display a template's properties:

1. Right-click (Windows) or [Control]-click (Mac OS X) on a template and select **Template Properties** from the pop-up menu.

The **Properties** dialog box opens.



Refer to the *Starting Your Project* chapter to learn how to set up your artist name and copyright info.

## Importing Multimedia files into the Library view

If you have a SWF file, a QuickTime 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 view to gain quick access to them.

### To create templates from multimedia files:

1. In the Library view, select the library into which you want to import the multimedia file.
2. Right-click (Windows) or [Ctrl]+click (Mac OS X) in the template list and select **Import >** one of the following choices from the pop-up menu:
  - ▶ **Import Image File:** import a bitmap image.
  - ▶ **Import Movie File:** import a movie file.
  - ▶ **Import Sound File:** import a sound file.
  - ▶ **Import Template File:** import a template created in Toon Boom Studio.

A browser opens.

3. Browse and select the file you want to import and click on the OK button.

The file will be added in the library.

## Importing a Template in Your Scene

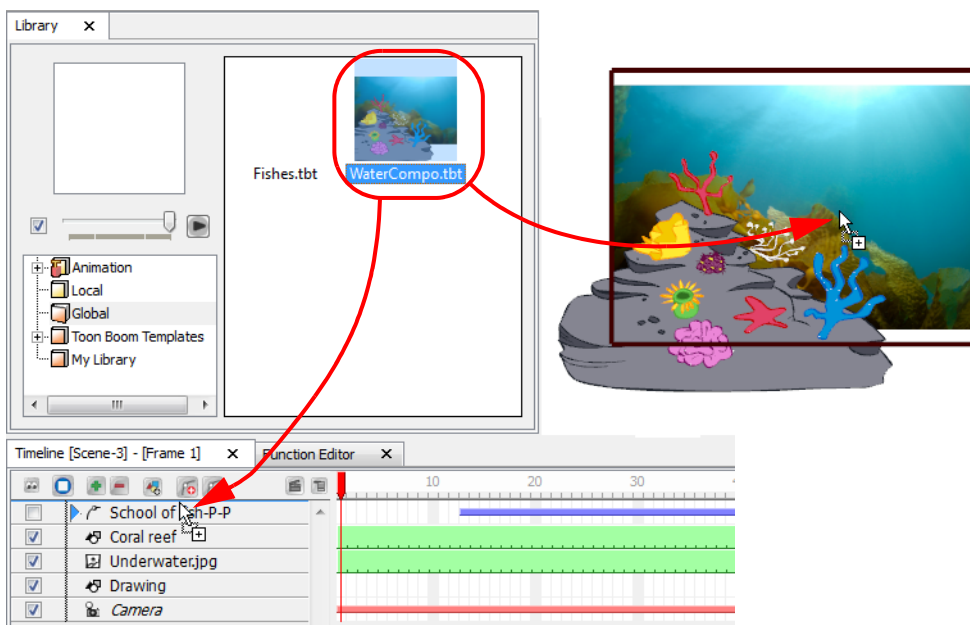
You can drag a template from the Library view to the Exposure Sheet or Timeline view to add its contents to your animation.



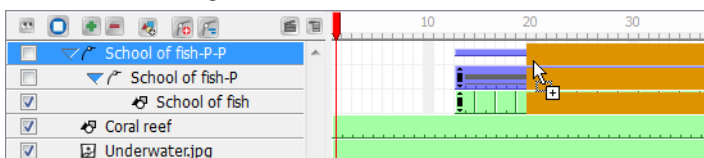
*Copying templates into your animation will increase the file size of your movies. You can link templates to your animation to keep the file size of your animation small. Refer to the Linking Templates to Media Elements topic to learn more about template linking.*

**To import a template into your scene:**

1. In the Library view, select the template you want to import.
2. Drag the selected template to the Camera view or Timeline view's left side.



- ▶ You can also drag a template to the Timeline view's right side into existing layers if the layer structure is the same as the existing one.



## 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 SWF animations small.
- It helps you update and manage frequently used material in a central location.

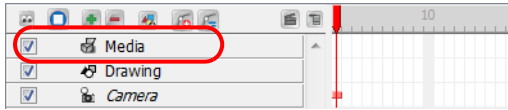


*If the contents of the template are updated, Toon Boom Studio updates all animation which uses that template.*

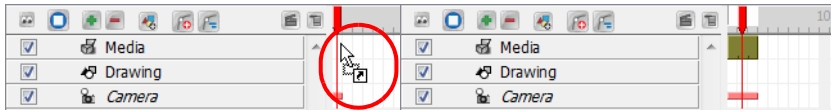
**To link a template to a media element:**

1. Select **Element > Add > Media**.

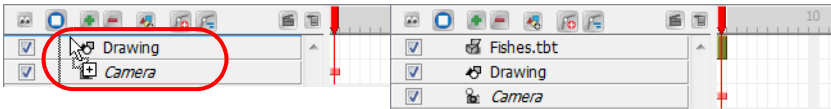
A new element appears in the Timeline view.



2. In the Library view, select the template you want to link and drag it to the media element you created in the Timeline view's right side.



- ▶ You can also create a media element as you link a template, by pressing [Alt] (Windows) or [Alt]+[⌘] (Mac OS X) as you drag the template to the Timeline view's left side.



Toon Boom Studio links to the original file.

## Copying Selected Template Contents into Your Animation

When you drag templates from the Library window, you can open the **Timeline Drag & Drop Preferences** to select the template contents that you want to copy into your animation.

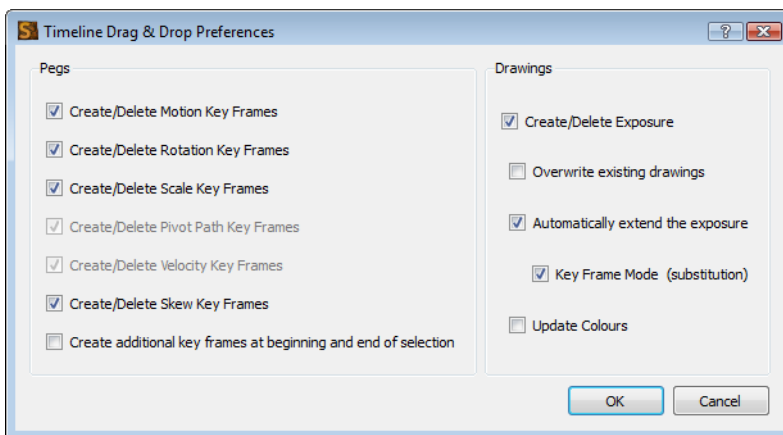
**To copy selected template contents into your animation:**

1. In the Library view, select the template you want to copy.
2. Drag the template to the Timeline view and place the template on top of the elements where you want to place it.

You must select the same number and hierarchy of elements as there are in the template. Otherwise you will not be able to complete the drag operation. Refer to the [Template Properties](#) topic to learn how to open the Template properties.

3. Press and hold [Alt] (Windows) or [Ctrl]+[Alt] (Mac OS X) and then release the mouse button.

The **Timeline Drag & Drop Preferences** dialog box opens.



4. Select the properties you want to copy to the animation.
5. Click on OK.



Refer to the [Animating a Puppet](#) chapter to learn more about the *Paste Special* options.

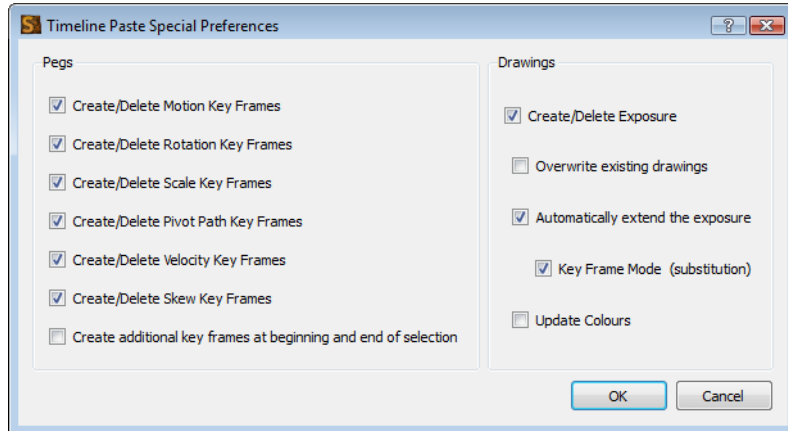
## Using Paste Special to Update Content from a Template

You can use the Paste Special command to update selected content with material stored in a template file. You can use this command to update drawings, timing, layout, as well as palettes.

### To use paste special to update content:

1. Select the template in the Library and select **Edit > Copy Template**.
2. In the Timeline, select the elements you want to paste the template onto.  
You must select the same number and hierarchy of elements as are in the template. Otherwise you won't be able to complete the paste operation. Refer to the Template Properties topic to learn how to open the Template properties.
3. Select **Edit > Paste Special**. You can also use the default keyboard shortcut [Ctrl]+[B] (Windows) or [⌘]+[B] (Mac OS X).

The **Paste Special** dialog box opens.



4. Select the options from the **Paste Special** dialog box.
5. Click on OK.



*Refer to the Animating a Puppet chapter to learn more about the Paste Special options.*

## What's Next?

So far you have learned about:

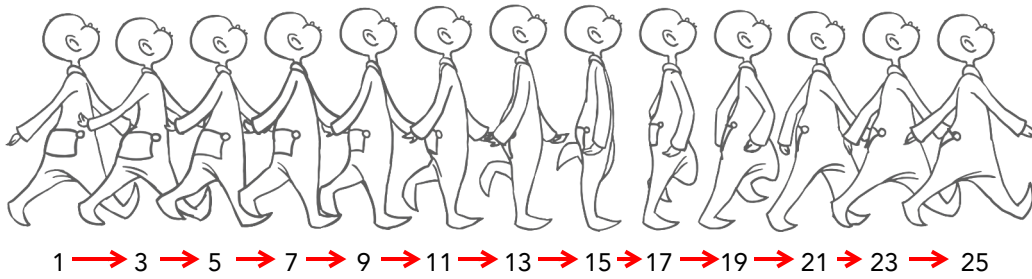
- Importing artwork and media in Toon Boom Studio
- Importing and vectorizing bitmaps in Toon Boom Studio
- Importing artwork using a TWAIN device
- Using the Library view to store and reuse animation assets

It is now time to learn how to add colour to your animation and artwork.





# Chapter 7 Layers and Timing



When you create animation, it is important to know how to set and modify the timing of your drawings. You can adjust the timing in both the Timeline and Exposure Sheet views, depending on which one you prefer.

In this chapter, you will learn how to work on your drawing's exposure and length. The keyframes and motion paths are covered in a separate chapter.



*To animate with motion paths (pegs) and keyframes, refer to the Scene Setup chapter.*

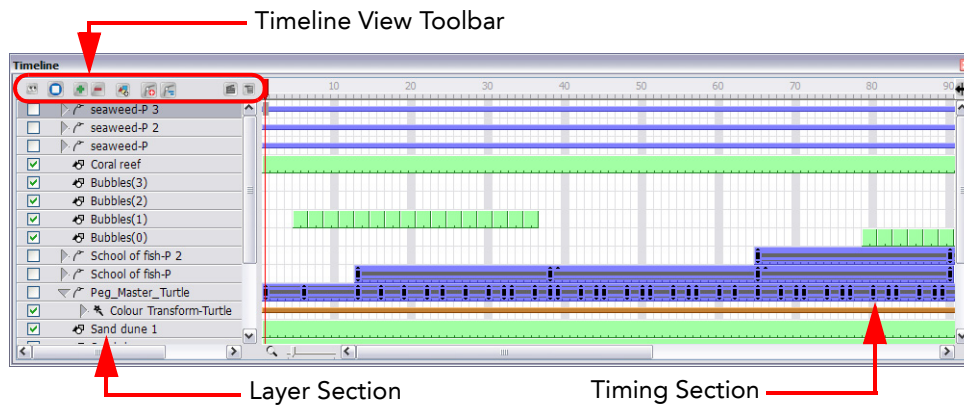
In this chapter, you will learn about the following:

- Understanding the Timeline and Exposure Sheet Views, on page 176
- Layers and Columns, on page 182
- Filling Exposure, on page 193
- Navigating Between Frames and Columns, on page 204
- Managing Drawings, on page 206
- Preferences, on page 208

## Understanding the Timeline and Exposure Sheet Views

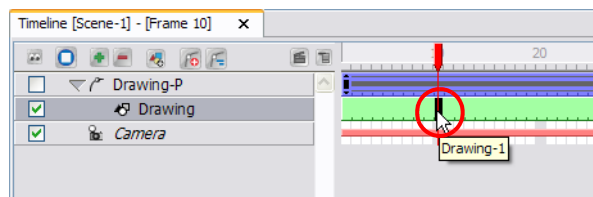
To set your animation timing, you will work mostly with the Timeline and Exposure Sheet views. This section will help you become familiar with these views, how they work and the differences between them.

### Timeline View



The Timeline view allows you to read your drawings and timing from left to right. It represents the scene's elements in their simplest form.

In the Timeline view, you can see your layers and their names as well as the drawing timing. The drawing name is displayed when you place your cursor above the drawing's exposure.














The Timeline view has three main sections:

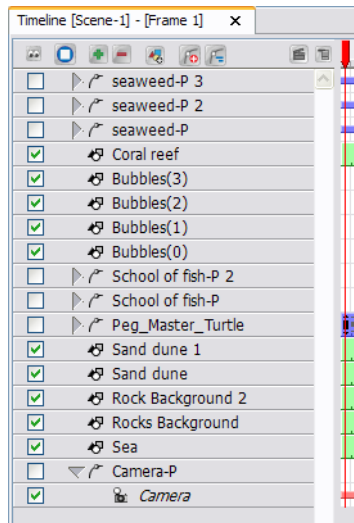
- Timeline View Toolbar, on page 177
- Layer Section, on page 178
- Timing Section, on page 178

## Timeline View Toolbar

The Timeline View toolbar is composed of nine different buttons allowing you to add, enable and disable layers as well as switching between the different scenes of a same project.

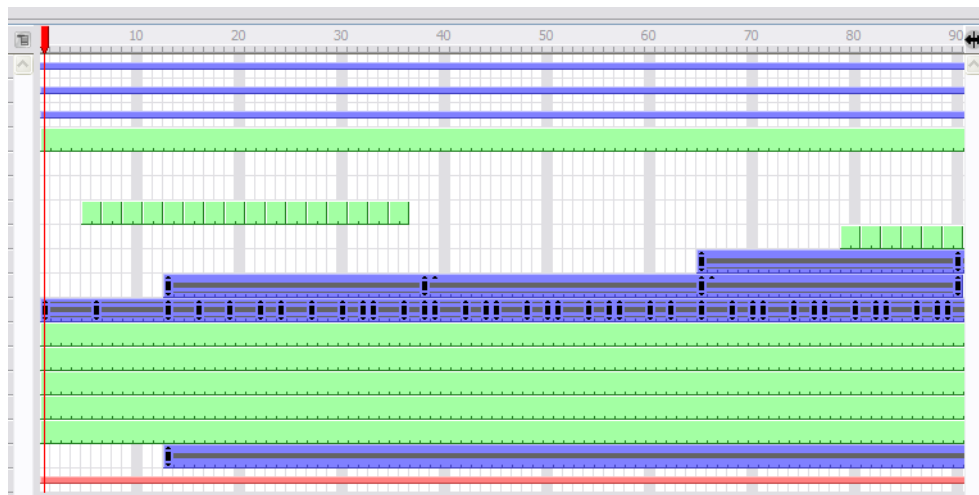
-  **Show/Hide All**  
Click on this button to show or hide all the layers in your timeline. This button will toggle between the two states.
-  **Solo Mode**  
Click on this button to toggle between the Solo Mode On  and Off  states. The Solo mode allows you to see only the currently selected layer as well as the layer that was selected when you enabled the Solo Mode to use it as a reference without having to disable all the other layers.
-  **Add New Elements**  
Click on this button to add a new element (layer) to your timeline. When you click on this button, the New Element dialog box opens and lets you choose which type of element you want, how many and how you want to name it.
-  **Delete Element**  
Click on this button to delete the selected layers in your timeline. Note that if you delete a layer with other layers connected to it, all the layers connected will be deleted at the same time. Also, if you only have one layer in your timeline, you will not be able to delete it. Toon Boom Studio's Timeline view must always have at least one drawing layer in it.
-  **Add Drawing Element**  
Click on this button to add a drawing layer in your timeline without having to go through the Add New Element dialog box. Simply click on the button and a new drawing layer will appear in the Timeline view. You can then double-click on the new layer to rename it.
-  **Add Peg Element**  
Click on this button to add a peg layer in your timeline without having to go through the Add New Element dialog box. Simply click on the button and a new peg layer will appear in the Timeline view. You can then double-click on the new layer to rename it.
-  **Add Parent Peg**  
Click on this button to add a peg layer in your timeline and connect it to any selected layer without having to go through the Add New Element dialog box. Simply click on the button and a new peg layer will appear in the Timeline view and the selected layer will be connected to it. You can then double-click on the new layer to rename it.
-  **Scene Menu**  
Click on this button to travel between the different scenes in your project.
-  **Timeline View Contextual Menu**  
Click on this button to display a drop-down menu containing commands related only to the Timeline view.

## Layer Section



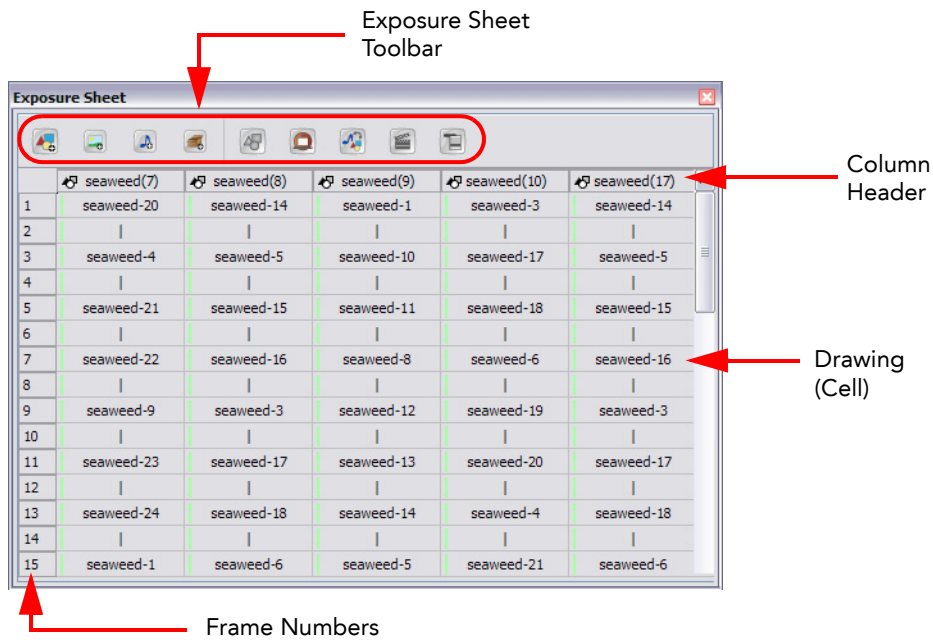
The Layer section is located to the left of the Timeline view. This is where you can add, delete, rename, reorder and attach layers.

## Timing Section



The Timing section is located on the right side of the Timeline view. This is where you can increase and decrease a drawing's exposure, duplicate drawings, add blank cells, etc. Any operation you do that affects a drawing or its timing is done in this section.

## Exposure Sheet View



The Exposure Sheet view lets you read your timing vertically where the columns represent drawing layers.

The Exposure Sheet view has two main sections and several other components:

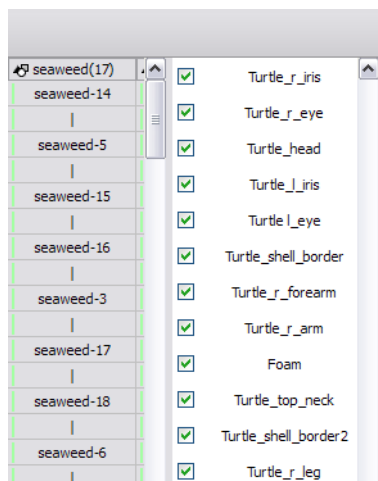
- Main Section, on page 179
- Element List Section, on page 180
- Exposure Sheet Toolbar, on page 180
- Column Header, on page 180
- Drawing, on page 180
- Frame Numbers, on page 181

## Main Section

	seaweed(7)	seaweed(8)	seaweed(9)	seaweed(10)	seaweed(17)
1	seaweed-20	seaweed-14	seaweed-1	seaweed-3	seaweed-14
2					
3	seaweed-4	seaweed-5	seaweed-10	seaweed-17	seaweed-5
4					
5	seaweed-21	seaweed-15	seaweed-11	seaweed-18	seaweed-15
6					
7	seaweed-22	seaweed-16	seaweed-8	seaweed-6	seaweed-16
8					
9	seaweed-9	seaweed-3	seaweed-12	seaweed-19	seaweed-3
10					
11	seaweed-23	seaweed-17	seaweed-13	seaweed-20	seaweed-17
12					
13	seaweed-24	seaweed-18	seaweed-14	seaweed-4	seaweed-18
14					
15	seaweed-1	seaweed-6	seaweed-5	seaweed-21	seaweed-6


The Main section shows the Drawing, Image, Sound and Media columns. You can see the drawing timing and names.

## Element List Section



The Element List section allows you to show and hide columns from your Exposure Sheet view. When you hide a column using your Exposure Sheet view, it is NOT disabled in the Timeline view. When you hide a column in your Exposure Sheet, the artwork is hidden from the Drawing view, but not from the Camera view. To hide elements in the Camera view, disable the layers in the Timeline view.

**To display the Element List section:**

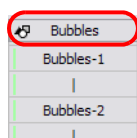
1. In the Exposure Sheet toolbar, click on the Toggle Element List  button.

## Exposure Sheet Toolbar



The Exposure Sheet view has its own toolbar where you can find the most common features. This toolbar is displayed by default. If you do not see it, select **Windows > Toolbar > Exposure Sheet**. The Exposure Sheet view must be part of your workspace in order to display its toolbar.

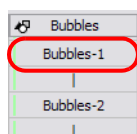
## Column Header



Each column available in the Exposure Sheet view has a header displaying the column's name. The column's name is the same as the corresponding timeline layer. If you rename one or the other, they will both be renamed.

A quick access menu is available when you right-click (Windows) or [Ctrl]+click (Mac OS X). This menu contains the command that affect an entire column such as renaming, changing the default colour or deleting a column.

## Drawing



When you see a cell containing a name or number, it represent the drawing you created in the Drawing or Camera view.

## Frame Numbers

On the left side of the Exposure Sheet view, the frame numbers. They read vertically instead of left to right, as in the Timeline view.

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

- To go to a particular frame, you can click on the frame number.

7	seaweed-22	seaweed-16	seaweed-8	seaweed-6	seaweed-16
8					
9	seaweed-9	seaweed-3	seaweed-12	seaweed-19	seaweed-3

- If you click and drag a selection downwards, you will select an entire frame range.

47	seaweed-4	seaweed-5	seaweed-10	seaweed-17	seaweed-5
48					
49	seaweed-21	seaweed-15	seaweed-11	seaweed-18	seaweed-15
50					
51	seaweed-22	seaweed-16	seaweed-8	seaweed-6	seaweed-16
52					
53	seaweed-9	seaweed-3	seaweed-12	seaweed-19	seaweed-3

In the Xsheet view, you can remove any selected frame range by pressing the [Delete] key.

### To delete a frame range:

- In the Exposure Sheet view, select a frame range by clicking on the first frame's number to delete and dragging down to the last frame to delete.

47	seaweed-4	seaweed-5	seaweed-10	seaweed-17	seaweed-5
48					
49	seaweed-21	seaweed-15	seaweed-11	seaweed-18	seaweed-15
50					
51	seaweed-22	seaweed-16	seaweed-8	seaweed-6	seaweed-16
52					
53	seaweed-9	seaweed-3	seaweed-12	seaweed-19	seaweed-3

- Press the keyboard shortcut [Delete] to delete the selection.

## Layers and Columns

In Toon Boom Studio there are two ways to see your layers:

- As horizontal layers in the Timeline view
- As vertical columns in the Exposure Sheet view.

Whether you work in the Timeline or Exposure Sheet view, they are the same and any modification you do to one or the other will be applied to both.

This topic is divided as follows:

- Layer Concepts, on page 182
- Layer Types, on page 183
- Adding New Elements, on page 184
- Deleting Elements, on page 186
- Modifying Elements, on page 187
- Expanding and Collapsing Layers, on page 192

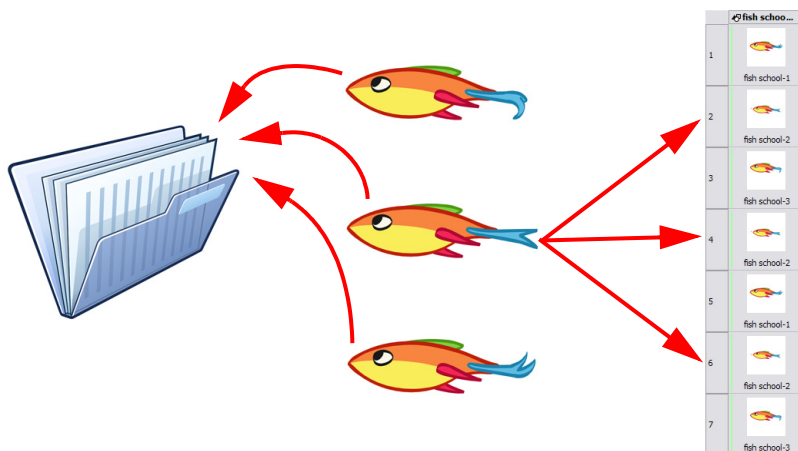
### Layer Concepts

In order to understand what happens when you duplicate a drawing, extend an exposure, create cycles or delete a drawing, it is important to know how layers and columns work.

The layers are linked to a folder containing all the drawings you create. This folder is contained inside your Toon Boom Studio project's folder.

When you create a new drawing in your Camera view, a drawing file is created inside the Drawing folder.

When you type a drawing name in a Exposure Sheet cell or Timeline frame, the system looks in the Drawing folder for the corresponding drawing to display. If there is no corresponding drawing, a new one is created.



When you create a drawing cycle, all of the repeated drawings are linked to the same original drawing. This means that when you modify, repaint or correct a drawing named "1," all drawings named "1" are updated simultaneously. In order to modify a drawing independently from its other exposures, you must duplicate the drawing.



*Refer to the [Duplicating a Drawing](#) topic to learn how to duplicate a drawing.*



## Layer Types

There are several types of layers you can add in the Timeline and Exposure Sheet views.

### Drawing Element

The most common layer type is the Drawing Element. Anytime you need to create a vector drawing use a Drawing element. **NOTE:** bitmap images are contained in Image Element layers.

The Drawing layer is tagged with the Drawing  icon.

### Image Element

If you import picture or bitmap images into your project, they are inserted in an Image element.


The Image layer is tagged with the Image  icon.



Refer to the Importing Artwork chapter to learn how to import images.

### Camera Element

The Camera element represents the camera filming your stage. You must position it if you want to change the camera frame in your scene or animate it with a Peg layer if you want to create a camera motion.

- The Camera layer is tagged with the Camera  icon.
- The Camera layer is not visible in the Exposure Sheet view.

If you want to have several cameras with different settings, you can keep adding Camera layers in your Timeline view. To switch between available cameras, select the desired camera from the Camera drop-down list located in the Scene toolbar.



Refer to the Scene Setup chapter to learn how to animate the camera.

### Effect Element

To enhance the look of your scene, you can add effect layers and attach your drawings to them. In Toon Boom Studio, there are three effects.

In the Timeline view, the Effect element is tagged with the Effect  icon.

The Effect layers are not visible in the Exposure Sheet view.



Refer to the Enhancing With Effects chapter to learn how to add effects to your project.

### Peg Element

A Peg Element can be described as a trajectory or motion path layer that does not contain drawings. It can be attached to any drawing layer, cut-out puppet or other peg layers. The layers attached to the Peg layer will follow the trajectory you set in this Peg layer.

In the Timeline view, the Peg element is tagged with the Peg  icon.

The Peg layers are not visible in the Exposure Sheet view.



Refer to the Scene Setup chapter to learn more about pegs.

## Sound Element

You can import sound files to add dialog and sound effects to your project. The sound layer will be added to your Timeline and Exposure Sheet view when you import a sound file in your scene.


The Sound element is tagged with the Sound  icon.



Refer to the Sound and Lip-sync chapter to learn how to import and play sound.

## Annotation Element

An Annotation Element is mainly used for educational purpose. The teacher can use these layers to draw and mark comments and corrections over an animation.

In the Timeline view, the Annotation element is tagged with the Annotation  icon.



Refer to the Traditional Digital Animation chapter to learn more about annotation elements.

## Media Element

A Media Element is used in different ways. The main way is to import an SWF movie in your project and keep it in one single layer instead of it being spread on several layers. The second way is to link a media element to your scene instead of importing templates from the Library directly in your scene. This way you can connect several scenes to the same template. If you modify the original template, it will be altered in all the scenes simultaneously.

The Media element is tagged with the Media  icon.



Refer to the Scene Setup chapter to learn more about media elements.

## Adding New Elements

In this section you will learn the different ways to add elements to your project. By default, when you create a new scene there is one Drawing layer included in your Timeline and Exposure Sheet views.


This section is divided as follows:

- Adding Layers in the Timeline View, on page 184
- Adding an Element From the Top Menu, on page 185
- Adding New Columns in the Exposure Sheet View, on page 185


### Adding Layers in the Timeline View

You can add a new layer in the Timeline view in two different ways; using the Layer toolbar or using the New Elements dialog box.

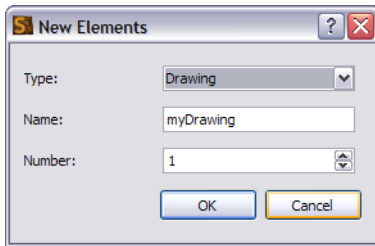
**To add a Drawing layer using the Timeline's Layer toolbar:**

1. In the Timeline's Layer toolbar, click on the Add Drawing Elements  button.  
A new layer appears in the Timeline and Exposure Sheet view.
2. Double-click on the layer to rename it.

**To add layers using the New Elements dialog box:**

1. In the Timeline's Layer toolbar, click on the Add Elements  button.

The **New Elements** dialog box opens.



2. In the Type drop-down menu, select the element type you want to add.
3. In the Name field, type the name of the layer you want to add. If you are adding more than one layer at the same time, all of these layers are given that layer's name and a numerical suffix.
4. In the Number field, use the up and down arrows or type the number of layers you want to add at once.
5. To complete the operation:
  - ▶ Click on the OK button to add your new layers and close the dialog box.
  - ▶ Click on the Cancel button to cancel the operation.






## Adding an Element From the Top Menu

**To add a new element from the top menu:**

1. In the top menu, select **Element > Add > Element Type**.  
A new element appears in the Timeline and Exposure Sheet view.

## Adding New Columns in the Exposure Sheet View

**To add a new column:**

1. In the Exposure Sheet toolbar, click on one of the following buttons:
  -  Add Drawing Element
  -  Add Image Element
  -  Add Sound Element
  -  Add Media Element
  -  Add Annotation Element

A new element appears in the Timeline and Exposure Sheet view.

2. Double-click on the Column header to rename the new column.


## Deleting Elements

You can delete elements from your scene in two different locations:

- Deleting a Layer From the Timeline View, on page 186
- Deleting Columns from the Exposure Sheet View, on page 186

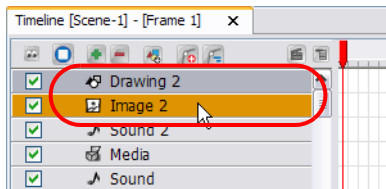
### Deleting a Layer From the Timeline View


There are two ways to delete a layer in the Timeline view,

- using the Delete Layers  button
- using the quick access menu.

**To delete layers in the Timeline view:**

1. In the Timeline view, select the layers to be deleted.



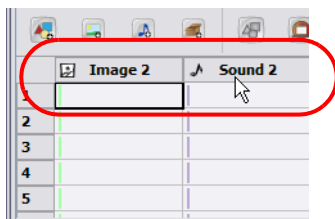
2. In the Timeline's Layer toolbar, click on the Delete Layers  button.  
You can also right-click (Windows) or [Ctrl]+click (Mac OS X) on the selection and select **Delete Element**.

### Deleting Columns from the Exposure Sheet View

You can delete columns in the Exposure Sheet view by using the quick access menu.

**To delete layers in the Xsheet view:**

1. In the Exposure Sheet view, select the columns to be deleted by clicking on their header.



2. From the top menu, select **Element > Delete Element**.

## Modifying Elements

Once you add elements to your project, you can modify their properties, name or ordering.

This section is divided as follows:

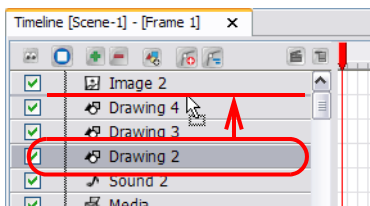
- Ordering Elements, on page 187
- Show and Hide Elements, on page 188
- Renaming an Element, on page 189
- Exposure Sheet Thumbnails, on page 190
- Changing the Colour of a Column or Layer, on page 190

## Ordering Elements


You can change the order of your layers in the Timeline and Exposure Sheet view. When you change the order of your layers in one of these views, the other one is updated automatically.

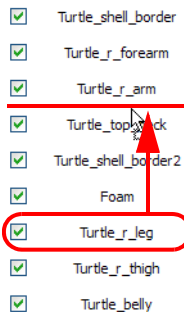
### To reorder layers in the Timeline view:

1. In the Timeline view, select the layers to move.
2. Drag the selection to the new location and drop it in between the existing layers. Dropping the selection on an existing layer would create a hierarchy.
  - ▶ Layers located on top of the Timeline view are displayed in front of the other ones.
  - ▶ Layers located at the bottom are displayed behind.



### To reorder columns in the Xsheet view:

1. In the Exposure Sheet toolbar, click on the Show Element List  button to display the Element List panel.
2. In the Element List panel, drag up or down the columns to reorder. Layers located on top of the Element List are displayed in front of the other ones. Layers located at the bottom are displayed behind.




## Show and Hide Elements

As you work in the Drawing or Camera view, some elements may be in the way or are used as references. You can hide these layers to make your work area easier and less cluttered.



The show/hide operation in the Timeline and Exposure Sheet views are independent from each other and will not affect the other view. For example, hiding the layers in the Timeline will not affect the layer's availability in the Exposure Sheet view and vice versa.

**To show or hide all layers at once in the Timeline view:**

- ▶ In the Timeline's Layer toolbar, click on the Enable/Disable All  button to show or hide all your layers at once. In the top menu, you can also select **Element > Display > Timeline > Show All**.

**To show or hide individual layers in the Timeline view:**

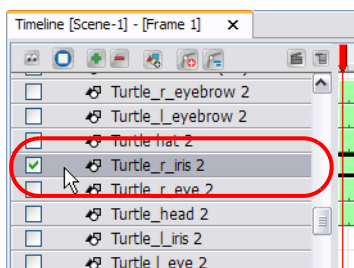
- ▶ In the Timeline view, uncheck the layer's checkbox to disable a particular layer. You can also select the layer to show or hide and select **Element > Display > Timeline > Show/Hide** from the top menu.




**To disable all layers but the selected one:**

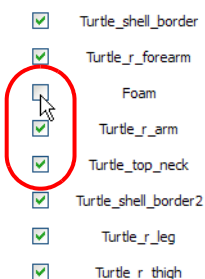
- ▶ In the top menu, select **Element > Display > Timeline > Hide All Others** to show only the currently selected layer and disable all the other layers.

You can also select **Display > Hide All Others** in the Timeline contextual  menu.



**To show and hide columns in the Exposure Sheet view:**

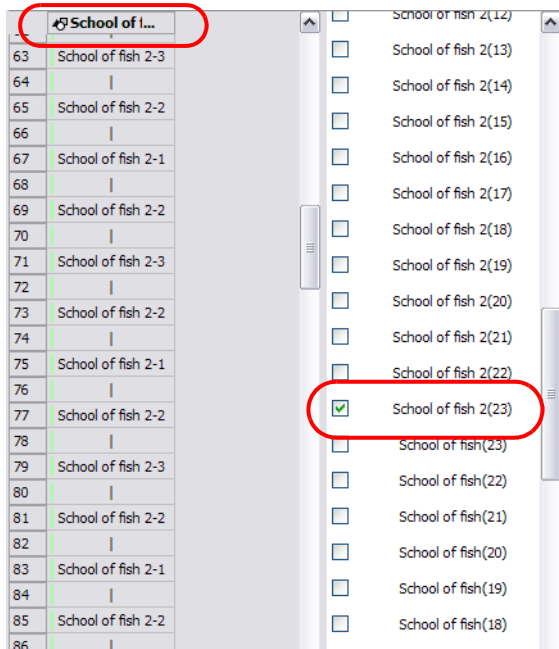
1. In the Exposure Sheet toolbar, click on the Show Element List  button.
2. In the Element List section, show or hide the columns by clicking in the column checkbox to add or remove the check mark.



- ▶ You can also select the column you want to hide and, from the top menu, select **Element > Display > Exposure Sheet > Hide**.

**To disable all columns except the selected one:**

- ▶ In the top menu, select **Element > Display > Exposure Sheet > Hide All Others** to show only the currently selected layer and disable all the other layers.

**To show all hidden Exposure Sheet columns:**

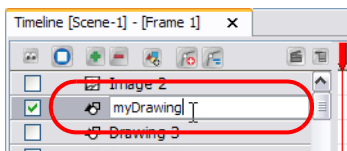
1. In the top menu, select **Element > Display > Show All Exposure Sheet Elements**.

**Renaming an Element**

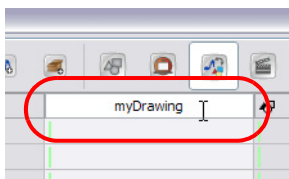
You can rename an element in three different ways; directly in the column header, in the timeline layer or in the Rename dialog box.

**To rename a layer in the Timeline view:**

1. In the Timeline view, double-click on the name of the layer to rename.
2. In the Name field rename the layer and press [Return] to validate the modifications.

**To rename a layer in the Exposure Sheet view:**

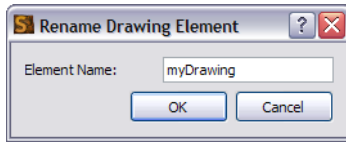
1. In the Exposure Sheet view, double-click on the column header of the layer to rename.
2. In the Name field rename the column and press [Return] to validate the modifications.

**To rename a layer in the Rename Element dialog box:**

1. In the Timeline or Exposure Sheet view, select the layer to rename.
2. In the top menu select **Element > Rename Element**. You can also right-click (Windows) or [Ctrl]+click (Mac OS X) and select **Rename Element**.

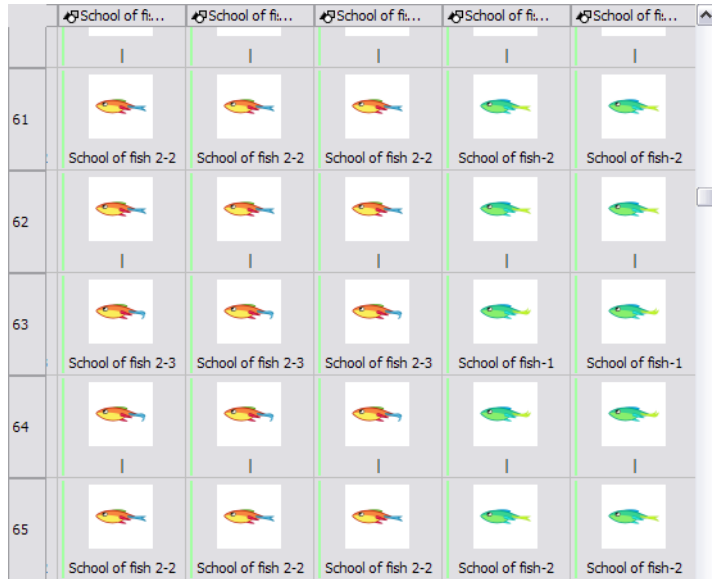
The **Rename Element** dialog box opens.

3. In the Name field, rename the layer.





4. Click on the OK button.

## Exposure Sheet Thumbnails



When there are a large number of columns and drawings in the exposure sheet, it is not always easy to quickly identify a particular column. Displaying the column thumbnails makes this easier. This option displays a small thumbnail picture in each cell where there is a drawing.

### To display the thumbnails:

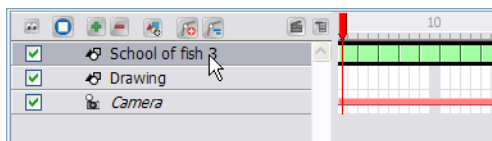
1. In the Exposure Sheet toolbar, click on the Thumbnails  button. You can also select **View > Thumbnails** from the Exposure Sheet contextual  menu. The thumbnails appear.

## Changing the Colour of a Column or Layer

To easily identify layers in your Timeline and Exposure Sheet views, you can change their colour. You can change the drawing exposure colour and track background independently.

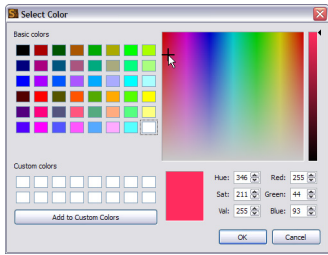
### To change the drawing exposure colour:

1. In the Timeline or Exposure Sheet view, select the layer you want to change the colour for.
2. In the top menu, select **Element > Display > Change Colour**.

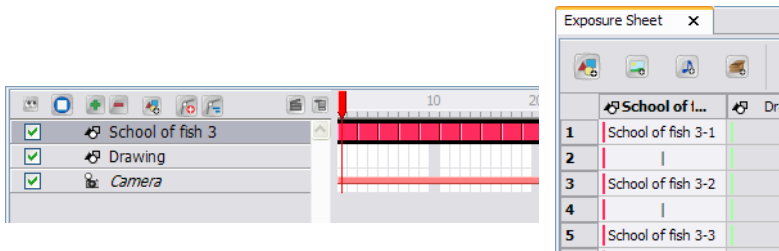




- In the Select Colour window, select the new colour for your layer.

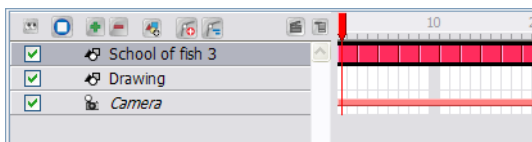


- Close the Select Colour window.  
The layer's colour is updated.

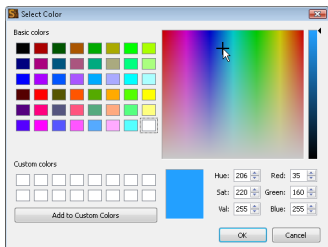


#### To change the timeline layer's background colour:

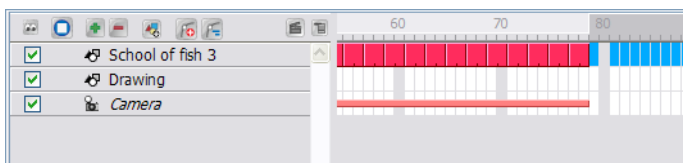
- In the Timeline view, select the layer you want to change the background colour for.
- In the top menu, select **Element > Display > Background Colour**.



- In the Select Colour window, select the new colour for your layer.



- Close the Select Colour window.  
The layer's background colour is updated.



#### To reset a layer's colour in the Timeline view:

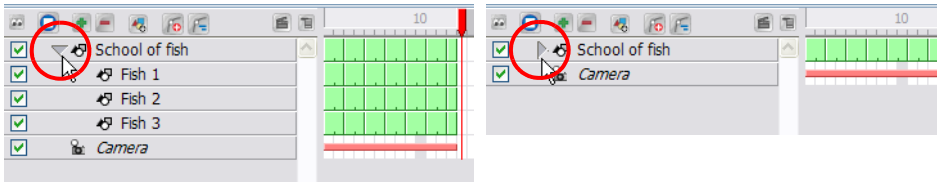
- In the Timeline or Exposure Sheet view, select the layers to reset the colour of and select **Element > Display > Default Colour**.

## Expanding and Collapsing Layers

To simplify the look of your Timeline view, you can collapse and expand your layers. If some layers are attached, you can collapse the top layer to hide all of the layers attached to it.

**To collapse a layer selection in the Timeline view:**

1. In the Timeline view, click on the Expand Arrow  button located on the layer you want to collapse.

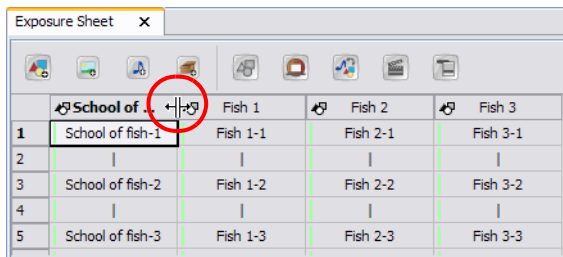


## Modifying the Column Width

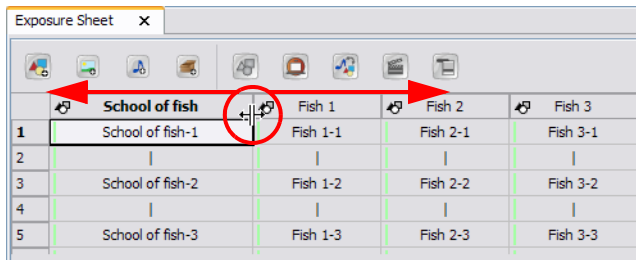
In the Exposure Sheet view, you can change the width of a column. If the name of your column is too long and does not fit in the column header, make the column wider to see it all.


**To modify the column's width:**

1. In the Exposure Sheet view, place your cursor on the edge of the column header you wish to adjust.



2. Once you see the Extend cursor appear, adjust the column width by dragging the Extend cursor.



3. To restore all columns to their default width, in the Exposure Sheet contextual  menu, select **View > Reset Column Width**.

## Filling Exposure

Toon Boom Studio provides different tools to fill-in exposures and values, create cycles, set increments.

This section is divided as follows:

- Typing Exposure, on page 193
- Extending Exposure, on page 194
- Dragging Cells, on page 195
- Increasing and Decreasing Exposure, on page 196
- Deleting Exposure, on page 198
- Inserting Blank Cells, on page 198
- Setting the Exposure, on page 199
- Filling a Selection with a Sequence, on page 200
- Creating Cycles, on page 201

### Typing Exposure

To fill-in your exposure, you can directly type the values in the Exposure Sheet view.

To enter a value in a column's cell, you have to either double-click in the cell or use the Change Label command and type in the numbers or letters.

#### NOTE:

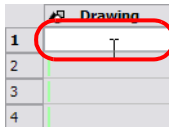
You can only use alphanumeric values (0-9, a-z, **underscore** (`_`) and **dash** (`-`)).

The following shortcuts can be helpful when editing the exposure values:

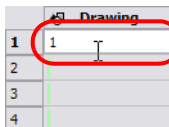
- [Return], you move on to the next cell.
- [ESC], you exit the typing mode to return to normal mode.

#### To type values in the Exposure Sheet view:

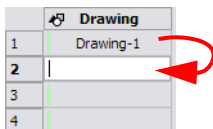
1. In a column, double-click on one cell. You can also right-click (Windows) or [Ctrl]+click (Mac OS X) on the selected cell and select **Change Label**.



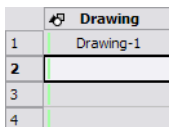
2. Type a value in the cell.



3. Press [Return] to move on to the next cell.



4. Press [ESC] to quit the edit mode.

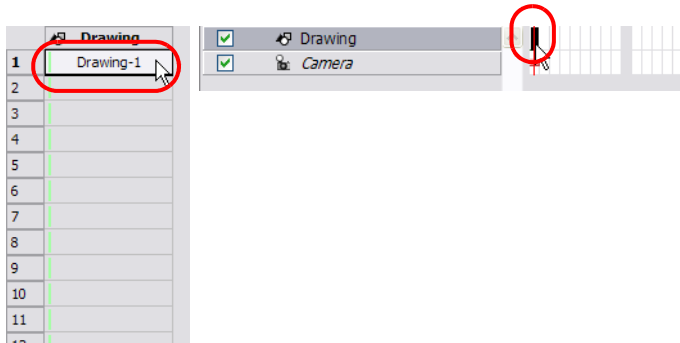


## Extending Exposure

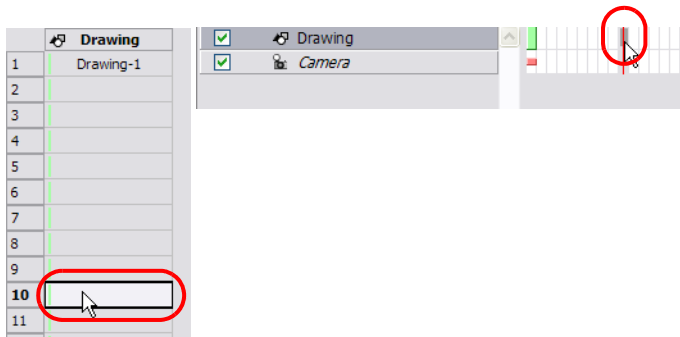
The Extend Exposure feature allows you to select a drawing exposure to make it appear longer in the scene.

### To extend a drawing exposure:

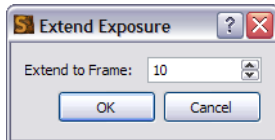
1. In the Exposure Sheet or Timeline view, select the drawing (cell) to extend.



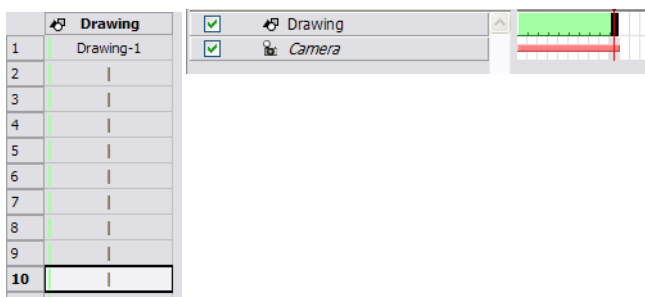
- ▶ You can also select the last cell of the area where you want the drawing exposure to end, as opposed to selecting the drawing cell directly. The cell must be an empty cell.



2. In the top menu, select **Element > Cell > Extend Exposure** or use the keyboard shortcut [Ctrl]+[Shift]+1 (Windows) or [⌘]+[Shift]+1 (Mac OS X).
  - ▶ If you selected the drawing cell, the **Extend Exposure** dialog box opens.
  - ▶ If you selected the last cell where you want the exposure to end, the exposure is automatically extended.



3. In the Extend to Frame field, type the frame number you want to extend the cell to.
4. Click on the OK button.

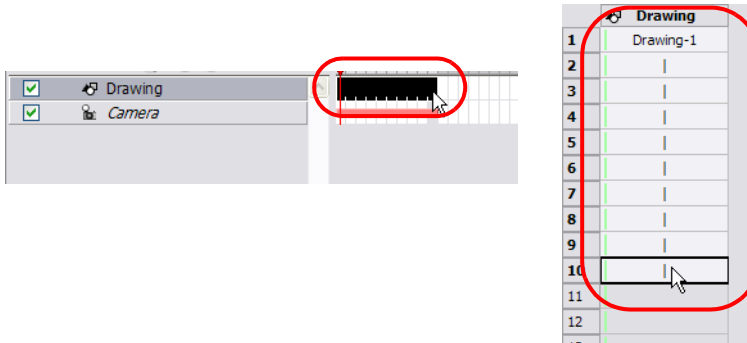


## Dragging Cells

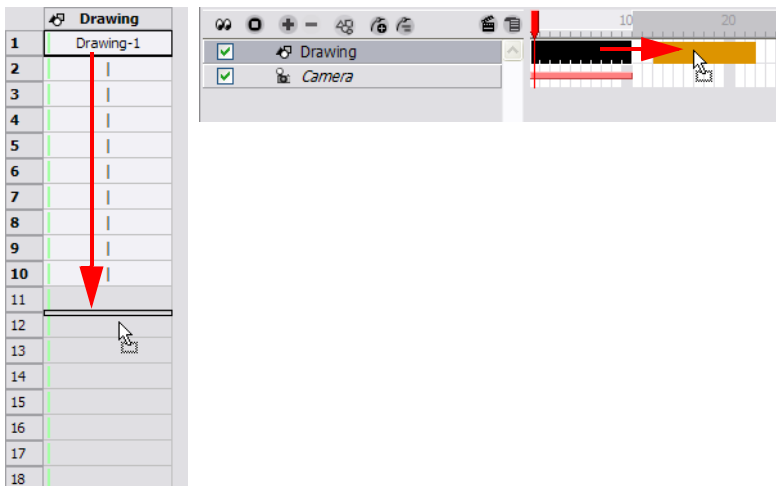
To readjust your timing, you can drag one or several cells to a new location in both Timeline and Exposure Sheet view. You can only drag a cell in the same column or layer.

**To drag a cell to another location:**

1. In the Timeline or Exposure Sheet view, select one or several cells to move.



2. Click on the cells selection and drag it to the new location.



- ▶ If you drop the selection, it overwrites the existing cells.

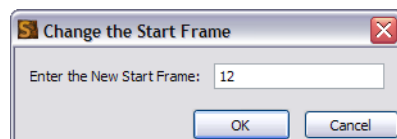


- ▶ If you hold [Ctrl] (Windows) or [⌘] (Mac OS X) while dropping the selection, the cells are copied and not moved.



- ▶ To change the starting frame of an element, you can also use the Change Start Frame command.

⇒ In the top menu, select **Element > Change Start Frame**.



- ⇒ Type the frame number where you want the selected layer to start.
- ⇒ Click on the OK button.

## Increasing and Decreasing Exposure

Once a value is entered in the Timeline or Exposure Sheet view, you can increase and decrease its exposure.

This section is divided as follows:

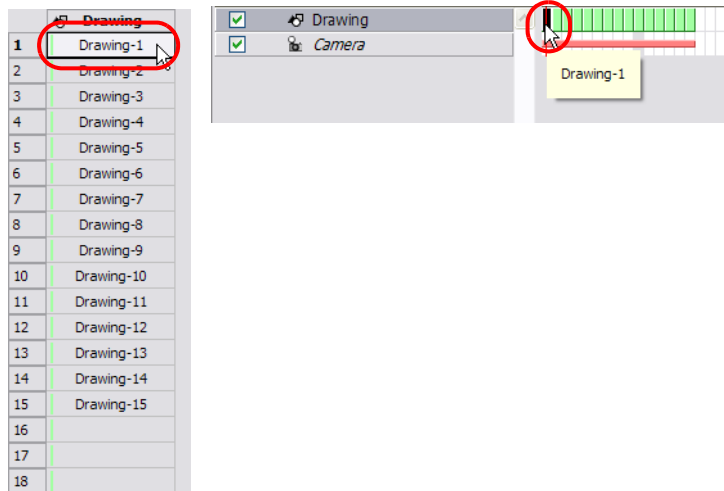
- Add Exposure, on page 196
- Remove Exposure, on page 197

### Add Exposure

Increasing the exposure adds one more exposure to a selected cell, repeating this action adds an extra cell every time. This is a quick way of extending a drawing exposure. Increasing an exposure always pushes the existing exposure down.

**To add exposure to a drawing:**

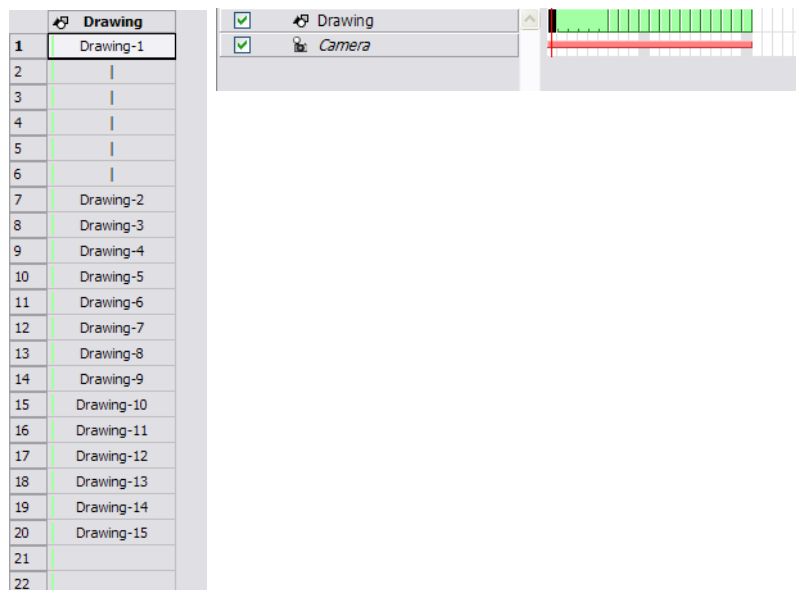
1. In the Timeline or Exposure Sheet view, select a cell.



2. In the top menu, select **Element > Cell > Add Exposure**.

You can also right-click (Windows) or [Ctrl]+click (Mac OS X) on the selected cell and select:

- ▶ From the Timeline view, **Exposure > Add Exposure**.
- ▶ From the Exposure Sheet view, **Add Exposure**.
- ▶ The default keyboard shortcut is [R].

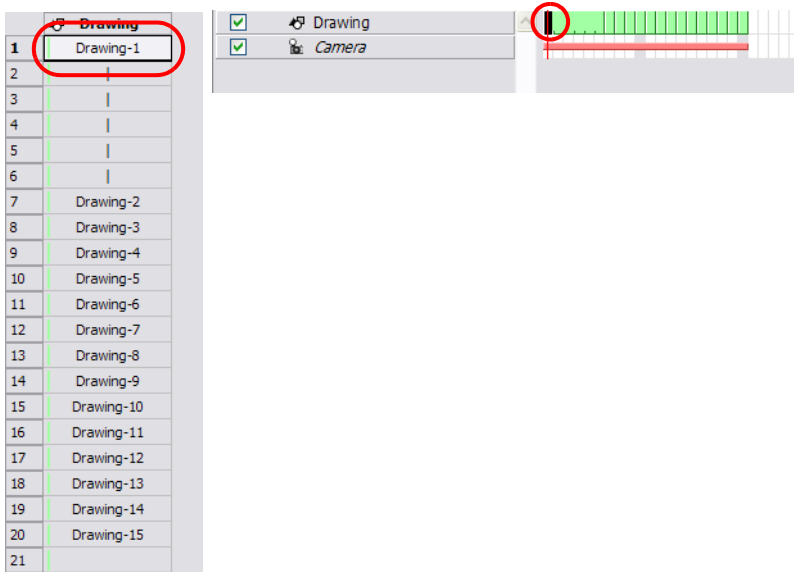


## Remove Exposure

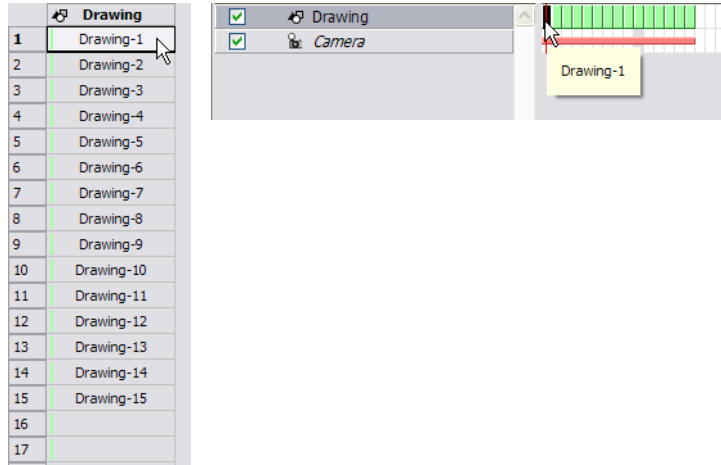
Decreasing the exposure removes one exposure from a selected cell, repeating this action removes an extra cell every time. This is a rapid way to reduce a drawing exposure and remove the exposed drawing.

**To use Decrease Exposure:**

1. In the Timeline or Exposure Sheet view, select a cell.



2. In the top menu, select **Element > Cell > Remove Exposure**.  
You can also right-click (Windows) or [Ctrl]+click (Mac OS X) on the selected cell and select:
  - ▶ From the Timeline view, **Exposure > Remove Exposure**.
  - ▶ From the Exposure Sheet view, **Remove Exposure**.
  - ▶ The default keyboard shortcut is [E].



## Deleting Exposure

You can delete a drawing's exposure and blank cells in several simple ways. Note that when you delete a drawing's exposure from the Timeline or Exposure Sheet view, you are not deleting the actual drawing file. You can always bring it back by typing its name again in a cell.



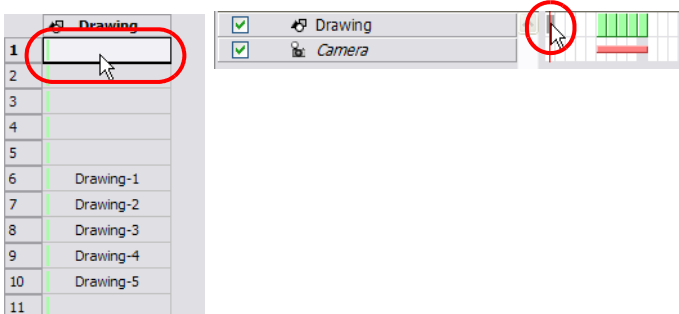
Refer to the Layer Concepts topic to learn more about the drawing concept.

### To delete selected exposures:

1. In the Timeline or Exposure Sheet view, select all the exposure you want to delete.
2. Press the default keyboard shortcut [Delete].
  - ▶ You can also right-click (Windows) or [Ctrl]+click (Mac OS X) on the selection and select **Delete Cell**.

### To delete blank cells:

1. In the Timeline or Exposure Sheet view, select a blank cell.
2. In the top menu, select **Element > Cell > Delete Blank Cell**.



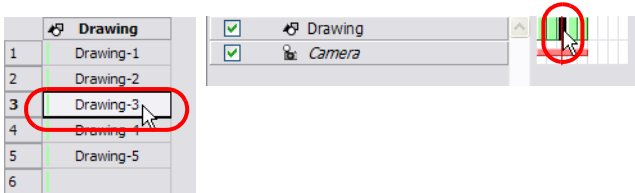
- ▶ You can also right-click (Windows) or [Ctrl]+click (Mac OS X) on the selected cell and select **Delete Blank Cell**.
- ▶ The default keyboard shortcut is [Shift] + [E].

## Inserting Blank Cells

Use the Insert Blank Cell option to place an empty cell between other cells. This pushes down existing exposure.

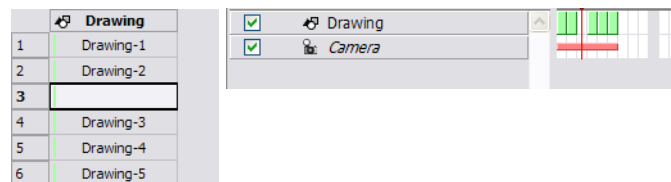
### To use Insert Blank Cell:

1. In the Exposure Sheet or Timeline view, select the cell where you want to insert a blank cell.



2. In the top menu, select **Element > Cell > Insert Blank Cell**. You can also right-click (Windows) or [Ctrl]+click (Mac OS X) on the selected cell and select **Insert Blank Cell**.
  - ▶ The default keyboard shortcut is [Shift] + [R].

The blank cell is inserted.



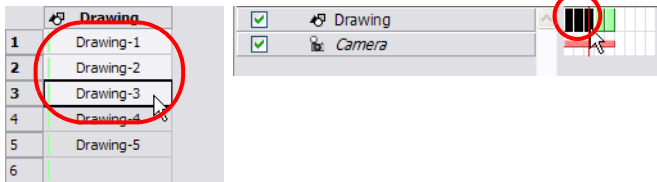


## Setting the Exposure

You can easily increase or decrease the exposure for a selected cell range by using the Set Exposure options.

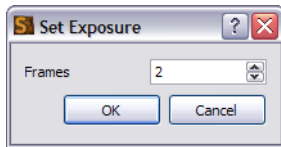
**To use the Set Exposure options:**

1. In the Timeline or Exposure Sheet view, select the cell range that you want to set the exposure for.



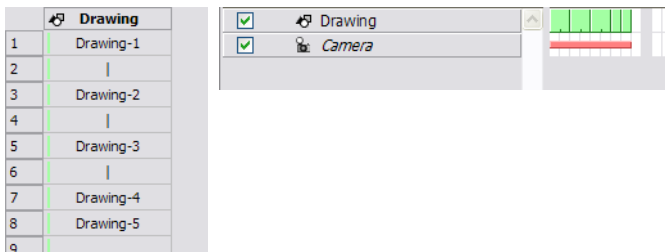
2. In the top menu, select one of the following:

- Element > Cell > Set Exposure to 1
- Element > Cell > Set Exposure to 2
- Element > Cell > Set Exposure to 3
- Element > Cell > Set Exposure
- ▶ If you choose the Set Exposure option, the **Set Exposure** dialog box opens.



- ▶ Type the number of frames you want each of the drawings to be displayed.
- ▶ Click on the OK button

The new timing is displayed.

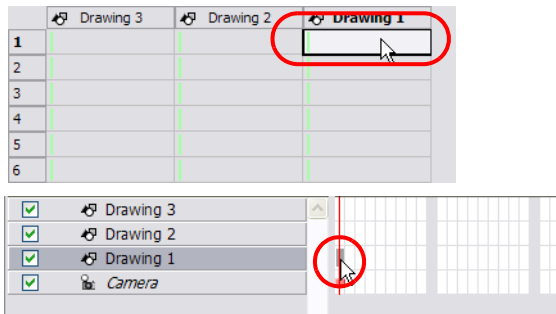


## Filling a Selection with a Sequence

The Insert Cell option is used to create a numbered sequence over a selection.

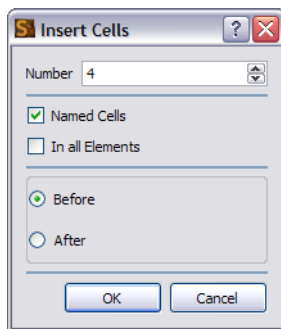
### To fill a selection with a sequence:

1. In the Exposure Sheet or Timeline view, select one cell or a cell range.

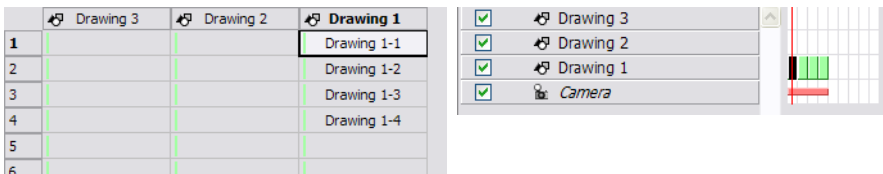


2. Select **Element > Cell > Insert Cell**.

- ▶ If you selected only one cell, the **Insert Cell** dialog box opens.
- ▶ If you selected a frame range, the timing sequence appears.
- ▶ If you select multiple cells across different layers (i.e. one cell on each layer), the behavior is that Insert Cell will add an extra row of blank cells before the selected cells.



3. In the Number field, type the number of cells.
4. If you want to insert cells with numbers in it, enable the Named Cells option. If you want to insert blank cells, disable the Named Cells option.
5. If you want to insert these new cells in all the layers, enable the In All Elements option. If you want the new cells to be added only in the currently selected layer, disable the In All Elements option.  
**NOTE:** Selecting in All Elements disables the Named Cells option and the cells added to all the elements are blank.
6. If you want the new cells to be inserted before the currently selected cell, enable the Before option. If you want the new cells to be inserted after the currently selected cell, enable the After option.
7. Click on the OK button.



## Creating Cycles

Once you have entered a series of drawings and exposures, you can create cycles out of them in several ways.

You can loop your drawings using the following commands:

- Create Cycle
- Create Advanced Cycle

The Create Cycle command is used to do simple cycles on your selected drawings. The Create Advanced Cycle command is used to create more complex cycles including reversed cycle.

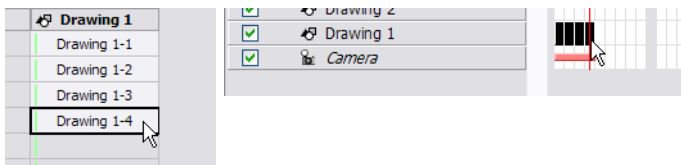
For example, a bouncing ball cycle where the sequence of drawings goes backwards and forwards during the cycle (1-2-3-4-3-2-1).

You can use the Advanced Cycle dialog box to automate the process of creating complex cycles.

When you cycle your selection, you are not duplicating the drawings. If you have a drawing named "1" in your cycle, when you modify that drawing, it is updated in all the cycles at once.

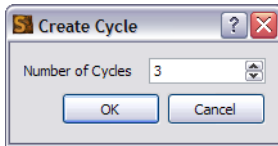
### To use the Create Cycle command:

1. In the Timeline or Exposure Sheet view, select the cell range to cycle.

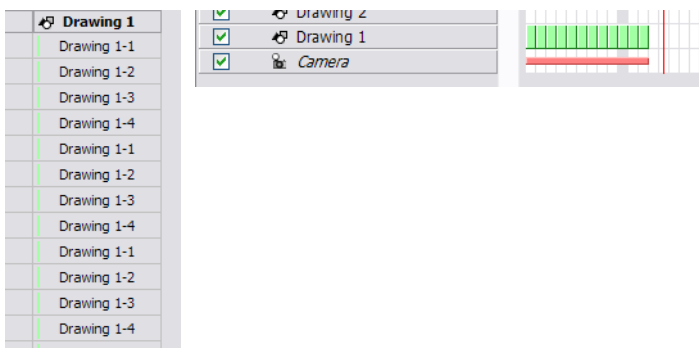


2. In the top menu, select **Element > Cell > Create Cycle**.

The **Create Cycle** dialog box opens.



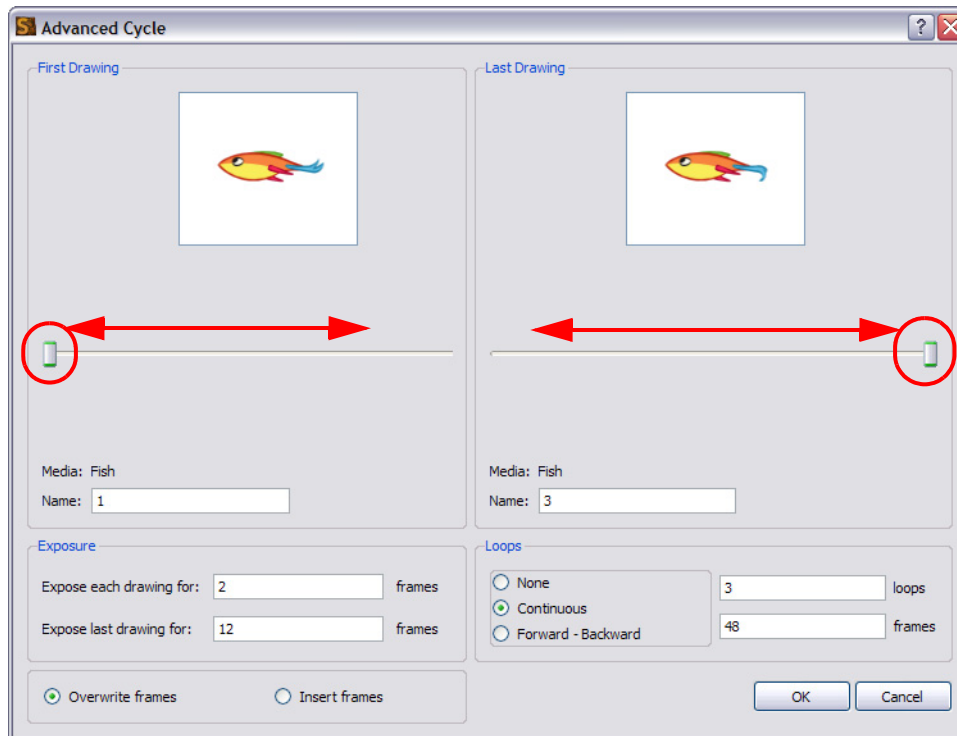
3. Enter the number of cycles you want, including the current selection.
4. Click on the OK button.



### To use the Create Advanced Cycle command:

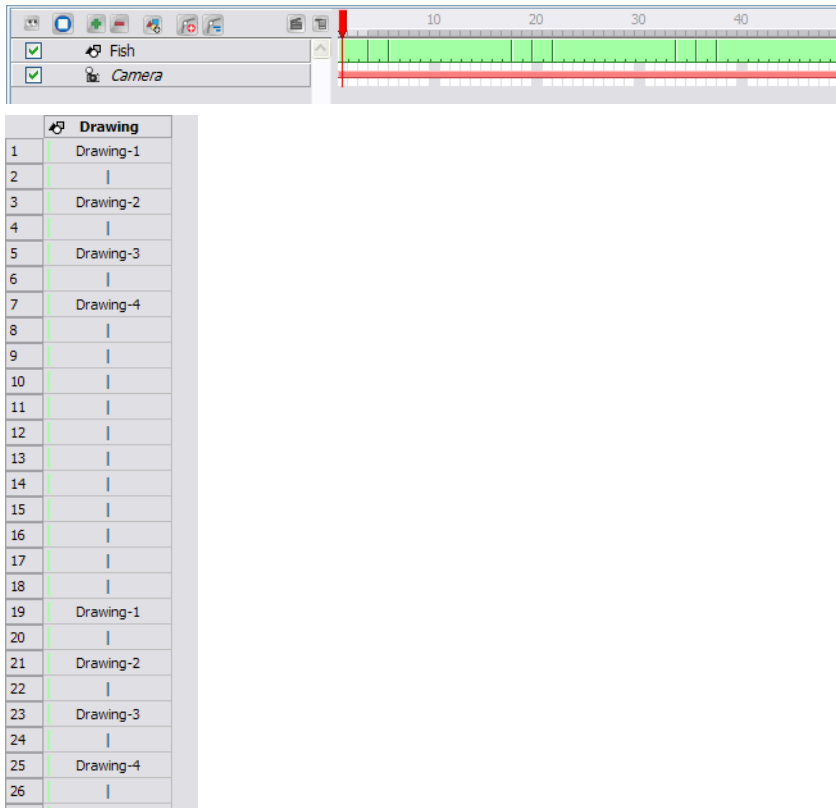
1. Select the element where you want to create the cycle.
2. Select **Element > Cell > Create Advanced Cycle**.

The **Advanced Cycle** dialog box opens.



3. 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 the drawing name in the Name fields or use the slider to select the drawings.
4. In the Exposure panel, set the number of cells you want each drawing to be exposed for during the cycle. You can set a different exposure for the last drawing in the cycle to stay on-screen by typing the amount of cell you want it to be exposed in the Exposed Last Drawing For field.
5. 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 loops of drawings 1-2-3, the resulting loop would be: 1-2-3-1-2-3.
  - Select Forward-Backward if you want the loop to contain the specified drawings in continuous order (first to last) followed by a backward order (last to first). In the Forward-Backward loop the last frame is only displayed once. Every consecutive loop starts with the second frame so that the first frame is not repeated. For example, if you created 2 forward-backward loops with drawings 1-2-3, the resulting loop would be: 1-2-3-2-1-2-3-2-1.
  - Loops field: type the number of times you want the cycle to repeat.
  - Frames field: type the number of frames. By default the Frames field is set to the number of number of frames.
6. 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.

7. Click on the OK button.



## Navigating Between Frames and Columns

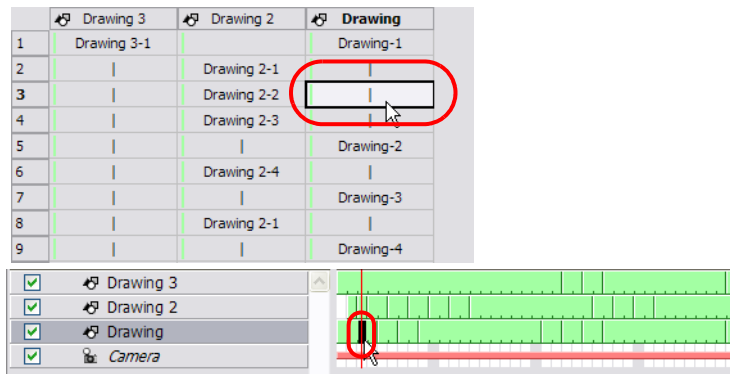
Once a cell is selected in the Timeline or Exposure Sheet view, you can navigate between the layers and drawings using keyboard shortcuts that are effective in the Camera, Drawing, Timeline and Exposure Sheet views.

You can navigate through:

- Columns
- Drawings
- Frames
- Elements

To navigate through the drawings, frames and elements:

1. In the Timeline or Exposure Sheet view, select a cell.

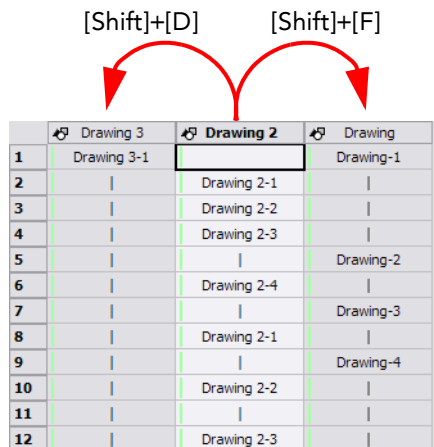


2. Once the cell is selected, you can navigate between:

- ▶ **Previous and next Timeline layers:** by using the keyboard shortcuts [D] and [F].



- ▶ **Previous and next Exposure Sheet column:** by using the keyboard shortcuts [Shift]+[D] and [Shift]+[F].



- ▶ **Previous and next drawings:** by using the keyboard shortcuts [Shift]+[A] and [Shift]+[S].

	🔄 Drawing 3	🔄 Drawing 2	🔄 Drawing
1	Drawing 3-1		Drawing-1
2		Drawing 2-1	
3		Drawing 2-2	
4		Drawing 2-3	
5			Drawing-2
6		Drawing 2-4	
7			Drawing-3
8		Drawing 2-1	
9			Drawing-4

Red arrows indicate navigation: from row 5 to row 4 ([Shift]+[A]) and from row 5 to row 6 ([Shift]+[S]).

- ▶ **Previous and next frames:** by using the keyboard shortcut [A] and [S].

	🔄 Drawing 3	🔄 Drawing 2	🔄 Drawing
1	Drawing 3-1		Drawing-1
2		Drawing 2-1	
3		Drawing 2-2	
4		Drawing 2-3	
5			Drawing-2
6		Drawing 2-4	
7			Drawing-3
8		Drawing 2-1	
9			Drawing-4

Red arrows indicate navigation: from row 5 to row 4 ([A]) and from row 5 to row 6 ([S]).


## Managing Drawings

Drawings that are created in Toon Boom Studio are not encapsulated in their cells. They are actual files stored in the project's Drawing folder. If you want to rename a drawing, you need to use the Rename Drawing command, instead of typing in the cell.

This section is divided as follows:

- Renaming a Drawing, on page 206
- Duplicating a Drawing, on page 206
- Copying and Pasting Drawings, on page 207

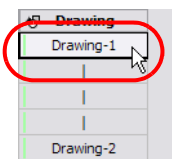
### Renaming a Drawing

To rename a drawing select the cell containing the drawing and use the Rename Drawing command from the Exposure Sheet contextual  menu.

**NOTE:** Do not type the new name in the cell as this will create a new drawing instead of renaming the existing one.

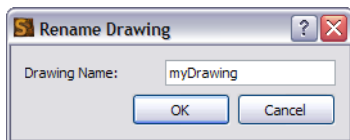
**To rename a drawing:**

1. In the Exposure Sheet view, select the drawing to rename.

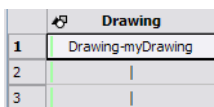


2. Right-click (Windows) or [Ctrl]+click (Mac OS X) on the selection and select **Rename Drawing**.

The **Rename Drawing** dialog box opens.



3. In the Drawing Name field, type the new drawing name.
4. Click on the OK button.

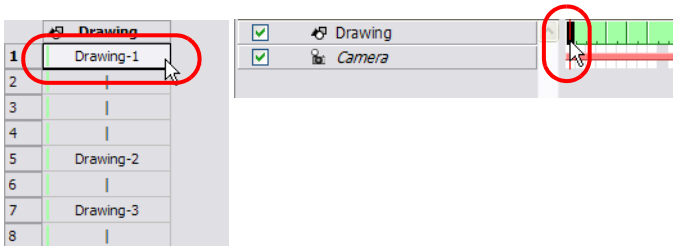


### Duplicating a Drawing

If you want to modify an existing drawing, but keep the original drawing intact, you can duplicate the drawing and work on the copy. When duplicating a drawing, the selected cell is replaced with the new drawing. The original drawing is not deleted and can still be accessed from the Drawing folder.

**To duplicate a drawing:**

1. In the Timeline or Exposure Sheet view, select the drawing to duplicate.





- Right-click (Windows) or [Ctrl]+click (Mac OS X) on the selection and select **Duplicate Drawing**.

	Drawing 2	Drawing
1		Drawing-5
2		
3		
4		
5		Drawing-2
6		

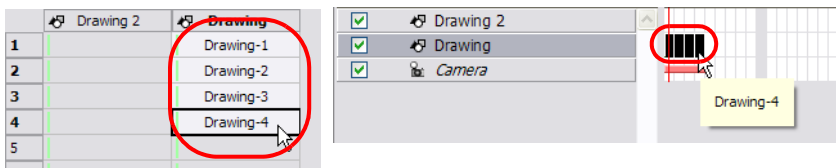
## Copying and Pasting Drawings

When you copy and paste a selection in the Timeline or Exposure Sheet view, you are not copying and pasting the actual drawings, you are pasting the exposure.

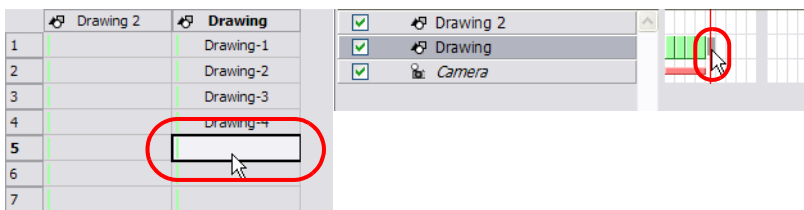
If you want to copy and paste the selected drawings into a different layer or paste the selection in the same layer to duplicate the drawings, you must use the Paste New Object command.

**To paste drawings as new objects:**

- In the Timeline or Exposure Sheet view, select the drawings to copy.



- In the top menu, select **Edit > Copy/Copy Cell**. The default keyboard shortcut is [Ctrl]+[C] (Windows) or [⌘]+[C] (Mac OS X).
- In the Timeline or Exposure Sheet view, select the cell where you want your pasted selection to start.



- In the top menu, select **Edit > Paste New Object**. The default keyboard shortcut is [Ctrl]+[Shift]+[V] (Windows) or [⌘]+[Shift]+[V] (Mac OS X).

	Drawing 2	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		

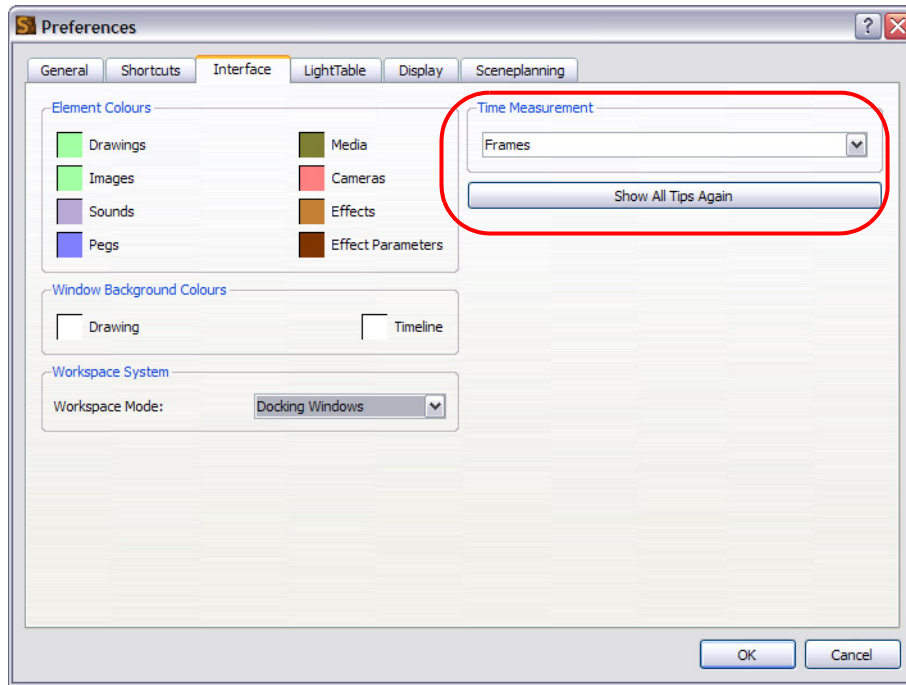
	Drawing 2	Drawing
1	Drawing 2-1	Drawing-1
2	Drawing 2-2	Drawing-2
3	Drawing 2-3	Drawing-3
4	Drawing 2-4	Drawing-4
5		

## Preferences

When adjusting your timing in the Timeline and Exposure Sheet views, you may want to set some preferences. This section covers the preference related to the timing measurement.

**To open the Preferences panel:**

- ▶ Windows: Select **Edit > Preferences**.
- ▶ Mac OS X: Select **Toon Boom Studio 7.1 > Preferences**.



### Time Measurement

The Time Measurement preference is located in the Interface tab. It is used to change the way the timing measurement is displayed in the Timeline and Exposure Sheet view.

- ▶ In the Time Measurement drop-down menu, select either the Frames or the Feet and Frames option and click on the OK button.

There are two ways of measuring an animation timing:

- **Frames:**  
The animation timing is measured in frames per second. To get a fluid animation, you need a minimum of 12 frames per second. This technique is frequently used when working with a software.
- **Feet and Frames:**  
This technique is mainly used when shooting the animation frame-by-frame directly on film. The length of the animation is calculated in length of film rather than frames per second.

## What's Next?

So far, you have learned about:

- The Timeline and Exposure Sheet Views
  - Layers and Columns
  - Filling Exposure
  - Navigating Between Frames and Columns
  - Managing Drawings
- It is now time to learn about Studio's hand-drawn animation features.



# Chapter 8 Traditional Digital Animation



Traditional digital animation, also known as hand-drawn animation, is the process of drawing every frame of an animation. This is very different from using cut-out puppets, where body parts drawn at different angles are stored in a bank and are swapped. These drawings do not use motion paths; everything is hand-drawn.

With the advent of digital animation, much has changed in the way that animation is done. However, there are still tried and true animation tools and techniques that every animator may still find useful. Most of these techniques are derived from the classic method of traditional animation.

The following sections will be covered in this chapter:

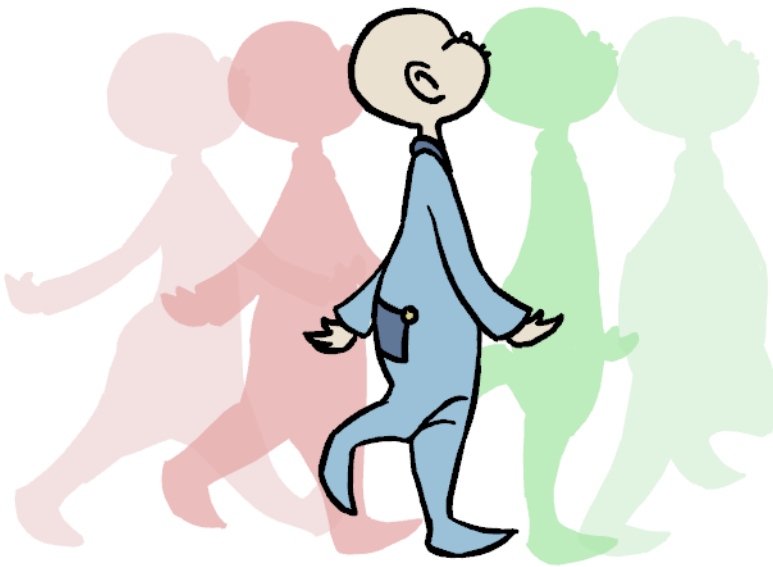
- Traditional Animation Tools, on page 212
- Animating Traditionally, on page 218
- Rotoscoping, on page 224
- Marking Corrections and Notes, on page 228
- Preferences, on page 230
- What's Next?, on page 231

## Traditional Animation Tools

When you animate digitally using traditional techniques, certain tools are needed to work effectively. Just as an animation table, paper and pencils are essential to the traditional animator, the tools listed here are needed for traditional animation when it is done digitally.

- Onion Skin, on page 212
- Auto Light Table, on page 213
- Static Light Table, on page 214
- Reposition All Drawings, on page 215
- Lock Drawing, on page 217
- Clear Drawing, on page 217

### Onion Skin



The Onion Skin is used to preview the previous and next drawings. This feature comes in handy when animating because it allows you to see the flow of a movement and lays it out in visible steps. By default, the previous drawings will appear with a shade of red and the next drawings will be displayed with a shade of green but you can change the display options in the Preferences panel.

Refer to the Preferences topic to learn about the Onion Skin preferences.











#### To use the Onion Skin feature:

1. Enable the Onion Skin feature:

- ▶ Using Windows, in the Onion Skin toolbar, click on the Show Onion Skin  button.

OR

- ▶ Using Windows and Mac OS® X, from the top menu, select **View > Onion Skin > Turn On Onion Skin**.

2. You can select the number of previous and next drawings you want to show either by clicking on the button from the Onion Skin toolbar or by following any of the menu paths listed below:
  - ▶  Select **View > Onion Skin > No Previous Drawing**  
The default keyboard shortcut is [Shift]+[Q].
  - ▶  Select **View > Onion Skin > Previous Drawing**
  - ▶  Select **View > Onion Skin > Previous Two Drawings**
  - ▶  Select **View > Onion Skin > Previous Three Drawings**
  - ▶  Select **View > Onion Skin > No Next Drawing**  
The default keyboard shortcut is [Shift]+[W].
  - ▶  Select **View > Onion Skin > Next Drawing**
  - ▶  Select **View > Onion Skin > Next Two Drawings**
  - ▶  Select **View > Onion Skin > Next Three Drawings**
3. The previous and next drawings will appear in both the Drawing and Camera view.

## Auto Light Table




The Light Table is used to preview the active layers above and beneath the selected layer. It is useful to be able to see the other layers when designing, animating or cleaning up your animation.



The Light Table feature is only available in the Drawing view.

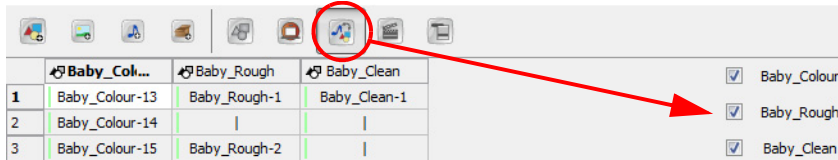
To use the Light Table feature:

4. Enable the Light Table feature:
  - ▶ When working in the Drawing view, select **View > Turn On Auto LightTable**.
  - ▶ In the Onion Skin toolbar, click on the Light Table  button.

- The drawings are displayed in the Exposure Sheet view.



- In the Exposure Sheet view, you can disable the layers you wish to hide from the Light Table for the Drawing view.



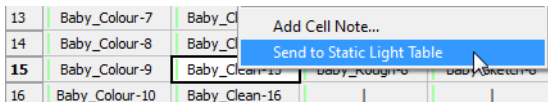
## Static Light Table



The Static Light Table works differently than the Auto Light Table and can only be accessed from the Exposure Sheet view. By using this feature, you can lock one drawing and have it appear in washed out colours behind every drawing, existing on any frame, belonging to any layer.

**To use the Static Light Table feature:**


- Go to the Exposure Sheet view.
- Right-click on the cell that contains the drawing that you wish to lock onto the Static Light Table.
  - From the pop-up menu select **Send to Static Light Table**.



Click on another cell where you would like to work with the aid of the drawing locked on the Static Light Table, then proceed to draw in the Drawing or Camera view.



**To display the elements on the Static Light Table:**

1. From the Exposure Sheet toolbars, click on the Toggle Static Light Table  button.



Thumbnails of the drawing appear under the Exposure Sheet columns.

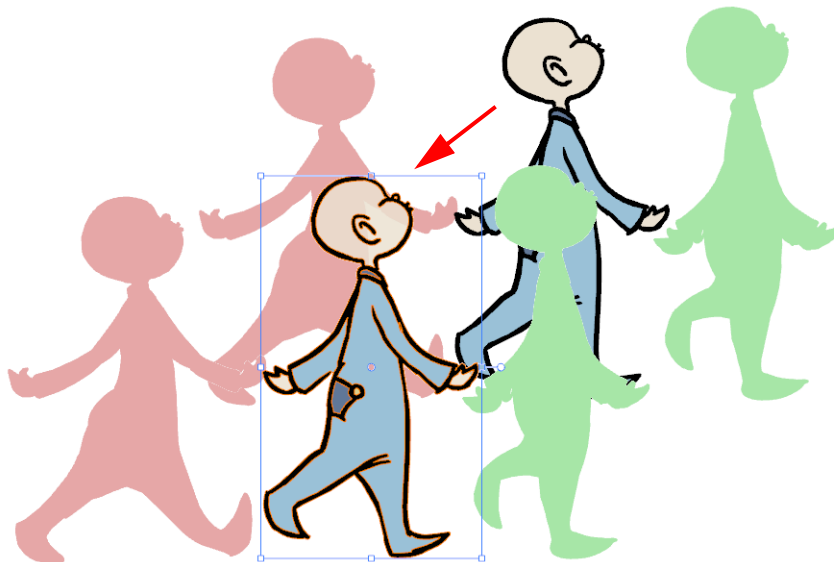


2. Send more than one cell containing drawings to the Static Light Table.
3. Use the checkmark boxes to show or hide the drawings sent to the Static Light Table.
4. Use the foreground/background swatches button to toggle the drawings sent to the Static Light Table either behind or in front of your other drawings seen in the drawing view.

**To clear a cell from the Static Light Table:**


1. Right-click on the thumbnail that you wish to delete.
2. From the pop-up menu select either **Delete** to remove that particular cell, or **Delete All** to remove all cells from the Static Light Table.

## **Reposition All Drawings**



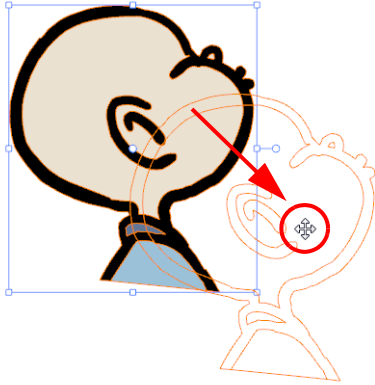
The Reposition All Drawings tool is used to change the position, scale, rotate or skew all the drawing strokes on every frame belonging to the same layer.

**To reposition all drawings:**

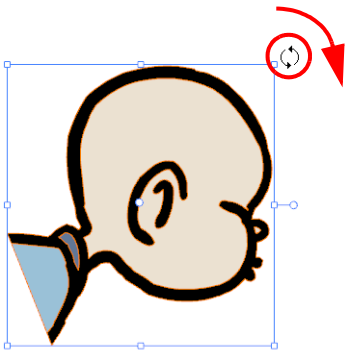
1. In the Drawing Tools toolbar, select the Reposition All Drawings  tool. This also automatically selects every stroke that composes your drawing in the Drawing view.

**To deform or reposition a selection:**

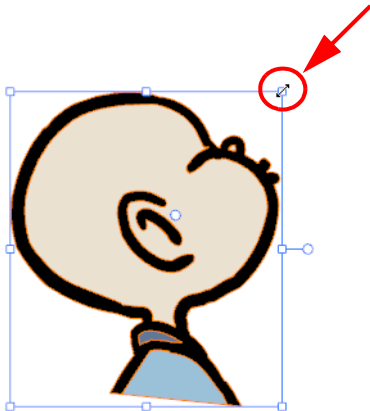
- ▶ To reposition, click and drag your selection to a new area.



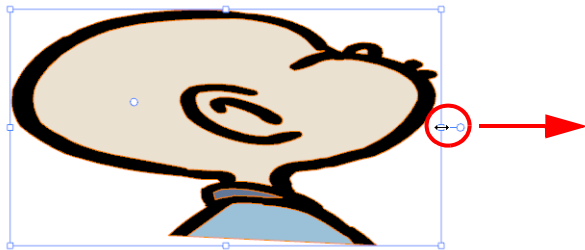
- ▶ To rotate, move the selection box handle in a circular motion.



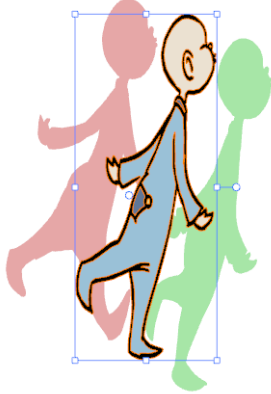
- ▶ To scale, pull or push either on the side, top or corner control point. Hold down [Shift] to lock the selection's ratio.



- ▶ To skew, drag the sides or top and bottom segments, between the control points.



- When you release your cursor, every drawing contained in the drawing layer you repositioned, scaled, rotated or skewed will follow the same transformation.



## Lock Drawing

Although the Reposition All Drawings tool can be quite useful, sometimes you might need to reposition all but a few drawings. Or in general, there might one or two elements, such as a background or point of reference that must absolutely remain fixed. The Lock Cell option is a good way to keep certain individual frames from moving, or from accidentally being drawn on.

**To use the Lock Drawing option:**

- In the Exposure Sheet view, select the cell that contains the drawing that you want to lock.
- Right-click on this cell and from the pop-up menu select **Lock Drawing**.

The cell containing the drawing should now be locked as indicated by the lock icon beside the cell name.

	🔒 Baby_Colour-1	🔒 Baby_Clean-19	🔒 Baby_Rough-10
19	Baby_Colour-1	Baby_Clean-19	Baby_Rough-10
20	Baby_Colour-2	🔒 Baby_Clean-20	
21	Baby_Colour-3	Baby_Clean-21	Baby_Rough-11
22	Baby_Colour-4	Baby_Clean-22	
23	Baby_Colour-5	Baby_Clean-23	Baby_Rough-12

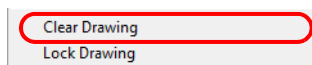
## Clear Drawing

Another feature to make drawing by hand much easier is the clear drawings feature from the Exposure Sheet view. Often when you are drawing with your Wacom tablet directly in the software, you might decide that you would like to start a particular drawing in an action sequence from scratch.

If you delete the frame from the Timeline view, there will be a gap in your timeline. If you use the Select tool to select all your drawing strokes and delete them you might risk missing a few strokes, as well as taking three steps to do what you could do in one.

**To use the Clear Drawing command:**

- In the Exposure Sheet view, right click on the cell that contains the drawing strokes that you wish to delete.
- From the pop-up menu, select the **Clear Drawing** command.



The Clear Drawing command does not work on Image layers or on extended exposure cells; the command only works on Drawing layers.

## Animating Traditionally

In Toon Boom Studio, you can easily animate traditionally and work entirely digitally. The process of hand-drawn animation through traditional animation procedures has been divided to lead you easily through the process.

- Animating , on page 218
- Cleaning Up, on page 220
- Power Painting, on page 222
- Setting the Timing, on page 223
- Playing Back Your Animation, on page 223

### Animating




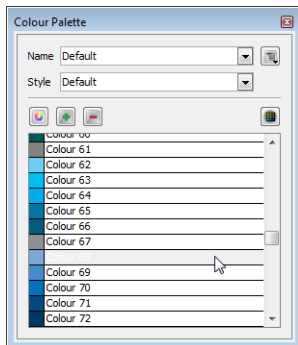
Now that you are aware of the existing tools, you can start your animation.

The first step to complete is the rough animation, which is the skeleton of your animation. You would usually start with the main action. For example, to animate a walk-cycle, you will start with the torso moves and the legs. Head, arms and clothes will be added later, during the secondary animation.

For a satisfactory animation, complete the main action before adding all of the details. If you start animating all of the details right away, you will lose a lot of time if you have to do corrections, and your animation will often look too rigid.

#### To animate:




1. In the Timeline view, create a new drawing layer and name it **Rough**.
2. In the Tools toolbar, select the Brush  tool, you can also use the default keyboard shortcut [A].
3. In the Colour view, select the colour you will use to draw. It is a good idea to choose a light colour for your rough animation to help for the following task, the Clean Up process.

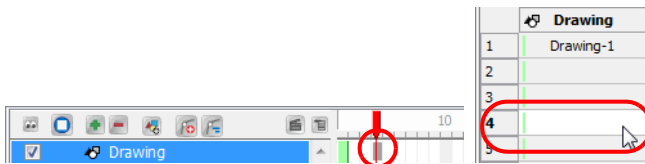


4. In the Timeline or Exposure Sheet view, select the cell where the first drawing will appear.

- In the Drawing or Camera view, draw the first Key drawing.



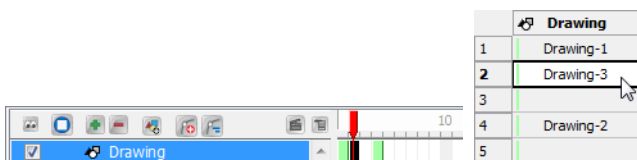
- In the Tools toolbar, click on the Enable Onion Skin button  button.
- From the Onion Skin toolbar, click on the onion skin's previous  or next  drawing buttons and from their drop-downs, select the number of previous and next visible drawings that you think you will need.
- In the Timeline or Exposure Sheet view, select the cell where your next key drawing will appear.



- In the Camera view, draw your second key drawing.



- In the Exposure Sheet View, select a cell between your two key drawings.



11. Draw your new drawing.



12. In the Timeline or Exposure Sheet view, select a new cell and repeat these steps for the new drawings.

## Cleaning Up




When your rough animation is ready, it is time to clean it up and ink it. The clean-up is also called tracing. It consists of tracing solid and clean lines over the rough animation to get closed zones. This is the final paperless animation step before the ink and paint step.



You will need to add a new drawing layer to draw your clean drawings. This is the equivalent of adding a sheet of paper and tracing over the rough using the animation disk.

### NOTE:

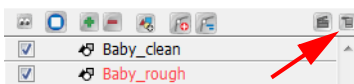
If you plan on tracing your animation in the Drawing view, you will need to enable the

Light Table  feature in order to display all the layers of your project.

### To trace your animation in a new layer:

1. In the Timeline view toolbar, click on the Add Drawing Layer  button.
2. Rename your new layer **Clean**.
3. In the Timeline view, select your rough layer and then click on the menu  button.
4. From the pop-up menu select **Lock > Lock**.


This is to prevent any accidental changes.



5. In the Timeline or Exposure Sheet view, select the cell on the clean layer corresponding to the first key drawing of your rough animation.
6. In the Drawing Tools toolbar, select the drawing tool of your choice.

7. In the Colour view, select the colour you will use to trace your animation. Pick a bold dark colour such as black to make sure it contrasts well with the light colour of your rough animation.
8. In the Camera view, start tracing the first key drawing.



9. If you have some other layers in the way, you can disable (uncheck) them temporarily so that only your rough animation and your clean-up layer are displayed. You can do this in two ways, either by unchecking these layers in the Timeline to affect what is seen in the Camera view, or disable them in the Exposure Sheet view to affect the Drawing view.
10. In the Tools toolbar, click on the Enable Onion Skin  button and extend the previous and next drawing numbers.
11. In the Timeline or Exposure Sheet view, select the next cell corresponding to a rough drawing.
12. In the Drawing or Camera view, trace your next drawing.



13. Repeat these steps for the rest of your rough drawings until you have a full set of clean ones.

**NOTE:**

This method allows you to keep the roughs and the cleans intact. You only need to disable the rough layer to prevent it from appearing in the scene.

## Power Painting

When you create a traditional digital animation, you need to paint each drawing one at a time. But you can use the Paint All tool to automatically paint closed zones in the same location within an element. To use the Paint All tool, you click a zone in a drawing object. 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, it fills the zone with the same colour. This can save you a lot of time when painting your animation.




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




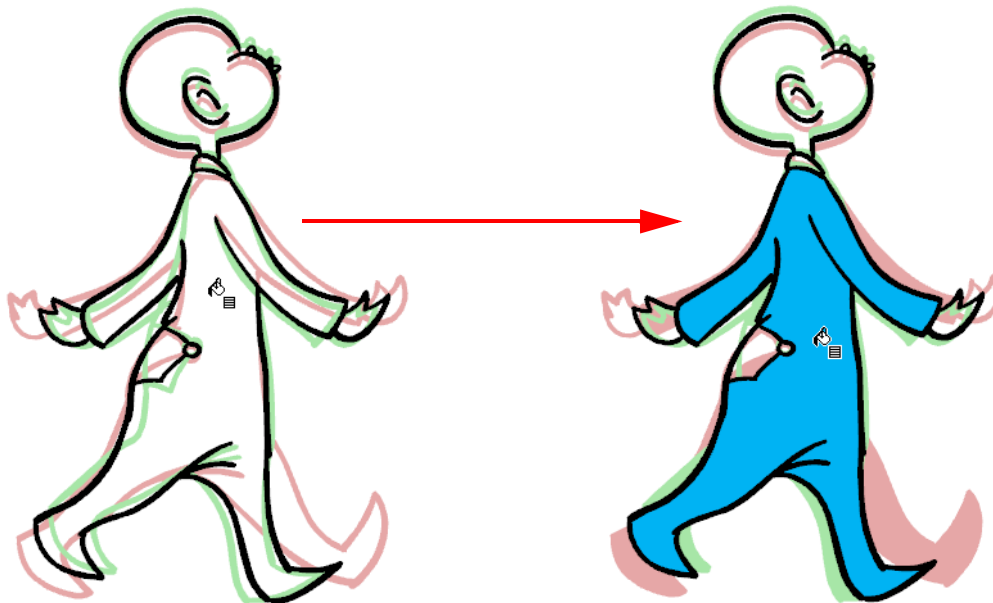
To learn more about painting, colour palettes and Onion Skin, refer to:

- Chapter 5: Adding Colours, on page 105
- Onion Skin, on page 212

### To power paint drawings in an element:

1. Enable the Onion Skin feature:
  - ▶ Using Windows, in the Onion Skin toolbar, click on the Show Onion Skin  button.
  - OR
  - ▶ Using Windows and Mac OS® X, from the top menu, select **View > Onion Skin > Turn On Onion Skin**.
2. You can select the number of previous and next drawings you want to show either by clicking on the button from the Onion Skin toolbar or by using the **View > Onion Skin** menu.
 

The previous and next drawings will appear in both the Drawing and Camera view.
3. From the Colour Palette view, select the swatch you want to use to paint the zone.
4. Select the Paint  tool from the Drawing Tools toolbar, or select **Tools > Drawing Tools > Paint** from the top menu.
5. Press [Shift]+[Alt] (Windows) or [Shift]+[Option] (Mac OS X) and click a zone that many drawings in the element share.



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



## Setting the Timing





*To learn how to set the timing of your animation, refer to the Layers and Timing chapter.*

## Playing Back Your Animation

You can playback your animation in the Camera view using the Playback toolbar.

**To play back your animation:**

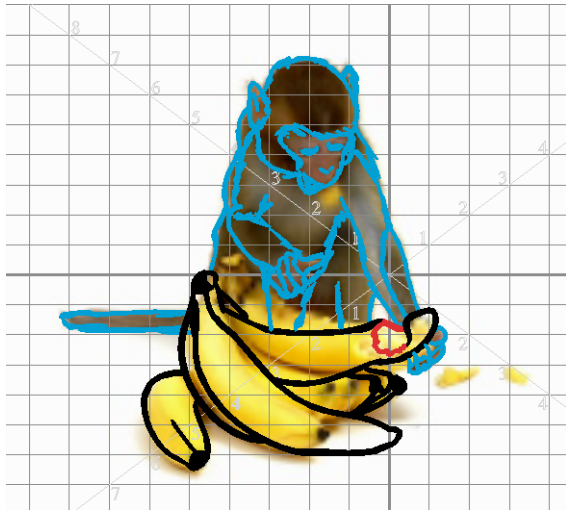
1. Be sure you are currently using the Camera view, as this feature is not available in the Drawing view.
2. In the Timeline view, disable the layers you do not want to show during playback.
3. In the Playback toolbar, click on the Loop  button if you want the playback to loop.
4. In the Playback toolbar, click on the Play  button to start the animation.

# Rotoscoping

Maybe you've heard about this process, but are not sure about how it can help you with your own animation. Perhaps you have an idea of how this technique can work with your project, but don't know where to begin. This section will help you get started.

- What is Rotoscoping?, on page 224
- Selecting a Video, on page 225
- Tracing the Character, on page 226
- Painting the Animation, on page 227

## What is Rotoscoping?



Rotoscoping is an animation technique where the animator traces over each frame of a live-action movie to reproduce a realistic movement. This technique was invented by Max Fleischer in 1915. The movie was projected frame by frame onto a piece of glass that the animator could trace over. The piece of equipment used in this process is called a Rotoscope. Today, the Rotoscope has been replaced by the computer.

## Reasons for Rotoscoping

Some of the reasons that some people may chose to use this process are listed below:

- The motion is very realistic
- The timing is accurate
- The characters or other elements retain their proportions and volume
- It helps you learn how to animate
- It helps you to understand how to break down a movement
- It teaches you how to animate very subtle motions, like a slight head turn or a slow raise of the hand

You can also superimpose your character design and only use the motion but not the actual object, person or animal from the video.

Due to the fact that rotoscoping is so realistic, it leaves little room for exaggeration, movement, squash and stretch, or a very cartoony look, so you have to be aware if this process suits your project.

## Selecting a Video



Selecting a video to rotoscope is simple, either:

- Film the actions you need to animate yourself. For example, you could film a dog playing with a ball or a person running.
- Find a free movie clip on the web.
- Purchase a royalty-free movie clip from a website.

Your movie format can be any of the following:

- AVI (\*.avi)
- QuickTime (\*.mov)
- MPEG (\*.mpg)
- iPod (\*.m4v)

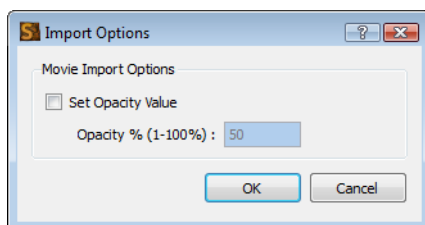
If you find a movie clip that is not in any of the formats listed above, you can easily convert it in an editing software. Your clip doesn't need to have a very high resolution, however the higher the resolution, the more detail you will be able to see. A minimum resolution of 300x200 is recommended.

## Importing a Video

When you create your Toon Boom Studio project, you can avoid having too many drawings to trace over by creating the project with a rate of 12 frames per second instead of 24 FPS.

**To import your video:**

1. In the top menu, select **File > Import File**.
2. Browse for your clip.
3. Click on the Open button.
4. In the Import Options dialog box, do NOT set an opacity value.



5. Click on the OK button.

## Tracing the Character

Before you start tracing your movie, setup your brush with a low smoothness and a lively tracing colour. This is so that your lines will be more faithful to the video still and so that you will be able to see your lines clearly.

### Tracing




When you trace over your imported movie, you should concentrate on one element at a time. For example, if there is a boy running with a balloon, we would trace the boy first and then move on to the balloon. This helps when trying to create separate movements. The boy would move differently than a balloon, even if they were moving at the same speed and in the same direction.


If the two objects or characters are interacting, it is best to draw them on the same layer.

Remember, when you trace over the character, try to close your zones for fast and efficient painting later on.

#### To trace your animation:

1. In the Timeline view, add a new layer to trace your animation.
2. If you work in the Drawing view, enable the Light Table  to see the live-action frames.
3. In the Camera/Drawing view, zoom into your image to see the details better.
4. Trace your first frame.



5. In the Timeline view, select the second cell and trace your second image.
6. In necessary enable to Onion Skin  to see your previous drawings.
7. Repeat the process until the animation is entirely traced.

### Fine Tuning the Animation


Once your animation is traced, it is a good idea to disable (uncheck) the live-action clip layer or turn off the Light Table and then go over your animation to fix the little details, such as open zones and uncompleted lines.



*To learn more about closing gaps and making invisible strokes, refer to the Drawing chapter.*

If you want your final project to be lighter once you are done tracing, it is recommended that you select your lines and flatten them.

#### To flatten your drawings:

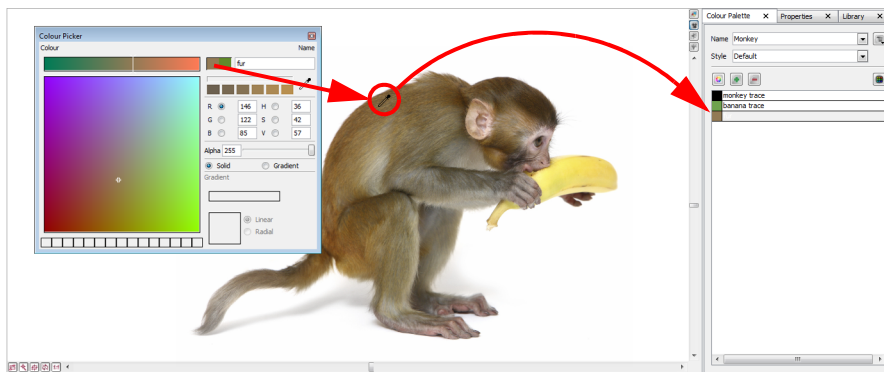
1. In the Drawing Tools toolbar, click on the Select  tool.
2. In the Timeline view, select the first frame of the tracing layer.

3. In the Camera/Drawing view, select your entire drawing.




4. From the top menu, select **Tools > Flatten**.
5. Repeat this process for all your drawings.

## Painting the Animation

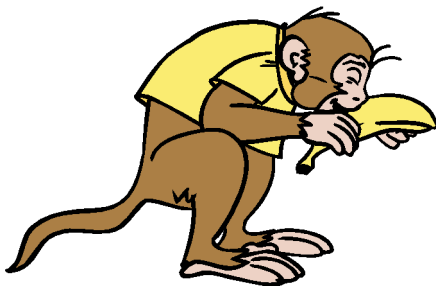


To create your colour palette, use Toon Boom Studio's special dropper to pick colours from your live-action movie and paint your animation in the same colours as the clip.

### To create your colour palette:

1. In the Colour view, create and rename your new palette.
2. In the Colour list section, add a new colour swatch by clicking on the Add Colour  button.
3. In the Camera view, display your live action movie.
4. Double-click on the new colour swatch to display the Colour Picker window.
5. In the Colour picker window, click on the Eye Dropper button.
6. In the Camera view, pick the desired colour.
7. Repeat this process until the colour palette is entirely finished.

Your animation is now ready for painting.



When you are ready to publish your animation, refer to the chapter *Exporting Your Project*.



## Marking Corrections and Notes



For the first time, Toon Boom Studio has integrated several features to make adding notes and making visual corrections easy.

- Annotation Elements
- Notes

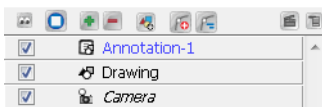
### Annotation Elements

It doesn't matter if you want to place notes, suggestions or corrections to the anatomy of a drawing, you will find the annotation levels are invaluable.

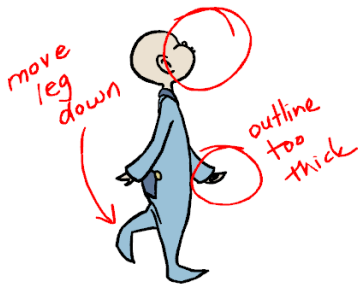
**To create an annotation element:**

1. From the Timeline view's the contextual  menu, select **New > Annotation** or select **Element > Add > Annotation** from the top menu. You can also click on the Add Annotation  button in the Exposure Sheet View toolbar.

The Annotation element appears in the Timeline and Exposure Sheet view.



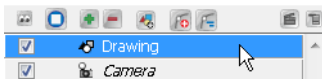
2. Draw or make notes on this layer.




You can also select an existing Drawing element and convert it to an Annotation element.

**To set a Drawing element as an Annotation element:**

1. In the Timeline view, select a Drawing element.




2. From the Timeline view's the contextual  menu, select **Annotation Elements > Set As Annotation Element** or select **View > Annotation Elements > Set As Annotation Element** from the top menu.

The colour of the element name will change from black to blue and the prefix **Annotation** will be added to it.



After the animator has made all the requested changes, it is possible to view the full animation without seeing all the red marks and arrows.

**To hide an annotation element:**

1. In the Timeline view, select the annotation element.
2. Click on the Timeline view's contextual  menu and select **Annotation Elements > Hide All Annotation Elements**. You can also select **View > Annotation Elements > Hide All Annotation Elements** from the top menu.

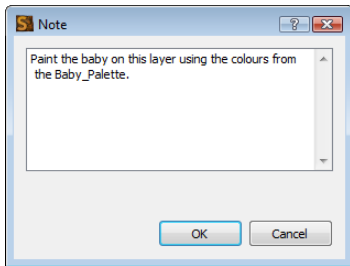
## Working with Notes

### Layer Notes

Another way to write small reminders, either to yourself or for others, is by writing a layer/element note.

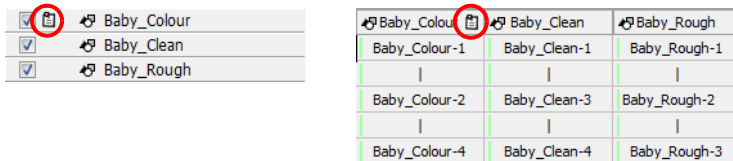
**To write a layer/element note:**

1. In the Timeline view, right-click on the layer in question and select **Add Element Note** or from the top menu, select **Element > Add Element Note**.  
The Note dialog box appears.
2. Type in a message, either to remind yourself about something concerning this layer, or for the next person you are passing this project on to.



3. When you are finished typing your message, click OK.

The existence of the message will be indicated by a small note icon on the respective element in both the Timeline and Exposure Sheet views.



Later on, if you want to edit or reread your own message, or access the message of another person, simply double-click on the icon or from the top menu, select **Element > Update Element Note** and the Note box will reappear.

### Cell Notes

To go into greater detail, or to make notes more specific, you can also create notes for an individual cell or frame.

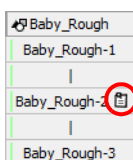
**To create a cell note:**

1. In the Exposure Sheet view, select the cell that you would like to make notes on.
2. Right-click and select **Add Cell Note** or from the top menu select **Element > Cell > Add Cell Note**.

The **Note** dialog box appears.

3. Compose a message about that specific cell or a drawing on that cell.
4. When you are finished composing your message, click OK.

The existence of the cell note will be indicated by a small note icon on the respective cell only in the Exposure Sheet view.



Later on, if you want to edit or reread your own message, or access the message of another person, simply right-click on the cell and select **Update Cell Note** or from the top menu, select **Element > Cell > Update Cell Note** and the Note box should reappear.

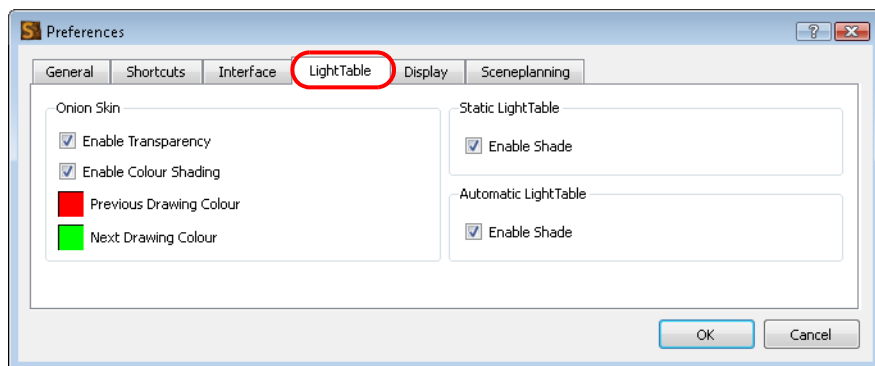
## Preferences

When doing traditional digital animation, you work with features and options which default behaviour can be customized via the Preferences panel.

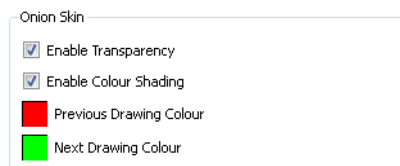
**To open the Preferences panel:**

- ▶ Windows: Select **Edit > Preferences**.
- ▶ Mac OS X: Select **Toon Boom Studio 7.1 > Preferences**.

You can find the preferences relating to the Onion Skin and Static Light Table features under the Light Table tab of the Preferences panel.



### Onion Skin



By default the onion skin is displayed as the element's shape in washed-out colours. Green represents the previous frames and red represents the next frames. But you can use the Preferences to customize the onion skin display.

- **Enable Transparency**  
By default the onion skin is displayed with transparency. You can change this behaviour so that the onion skin drawing shows as opaque by disabling this option.
- **Enable Colour Shading**  
By default the onion skin's previous and next drawing are displayed in red and green washed out colour. You can disable the Enable Colour Shading to use the current drawing's colours washed out as the onion skin display.
- **Previous Drawing Colour**  
Click on the red colour swatch to display the colour picker in which you can select a new colour for the previous drawings displayed in the Camera view.
- **Next Drawing Colour**  
Click on the green colour swatch to display the colour picker in which you can select a new colour for the next drawings displayed in the Camera view.

### Static Light Table



- **Enable Shade**  
By default the Static Light Table will display the other drawings as washed out colours. You can disabled this option to display the other drawings with their real colours.



## What's Next?

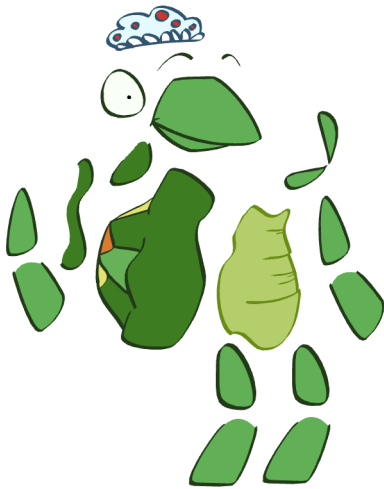
So far, you have learned about:

- Traditional Animation Tools
- Animating Traditionally
- Rotoscoping
- Marking Corrections and Notes

It is now time to learn about creating animated puppets from your drawings or photographs.



# Chapter 9 Creating a Cut-out Puppet



With Toon Boom Studio's extensive set of tools, you are able to create animated puppets from your drawings or photographs. This technique is known as cut-out animation because of the way you move cut-out pieces around instead of drawing.

This chapter is divided as follows:

- About Building a Cut-out Puppet, on page 234
- Choosing Your Character, on page 235
- Cutting the Character into Pieces, on page 237
- Attaching the Pieces, on page 242
- Storing the Character in the Library, on page 249
- What's Next?, on page 250

## About Building a Cut-out Puppet

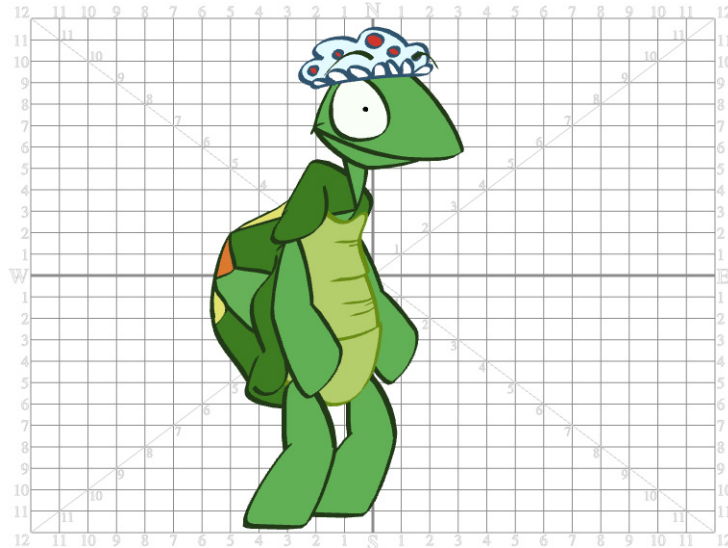
The Toon Boom Studio cut-out puppet principle is very similar to cutting up a character drawn on a sheet of paper and assembling the pieces using little brass fasteners. You create a drawing for each your character's body parts and attach them in the Timeline view. Then, you can articulate the character and animate it by giving it a slightly different pose on each frame.



## Choosing Your Character

As you start building your puppet, the first thing you need to do is to select your character. If this is your first puppet it is always better to choose a simple character. A simple character is a character with two legs, two arms, a head and torso. To start with you should avoid a character with too many loose clothes such as a cloak or baggy pants. Once you are used to constructing puppets, you will understand how to cut them apart and loose clothing won't be as much of a challenge for you.

The character we chose to demonstrate how to cut apart a character is a turtle.



You could also create your character from a picture. Instead of drawing a turtle, you could use a photograph of a turtle and break it apart in Toon Boom Studio or another third party software such as Adobe Photoshop.



## Creating a New Project and Importing a Character

The best way to break down your character is to create a new scene and import the character into the scene. There are several ways to import your character in a scene:

- You can create a template using the Library and import it in your new scene
- Import a bitmap image
- Scan a drawing
- Import a picture, etc.

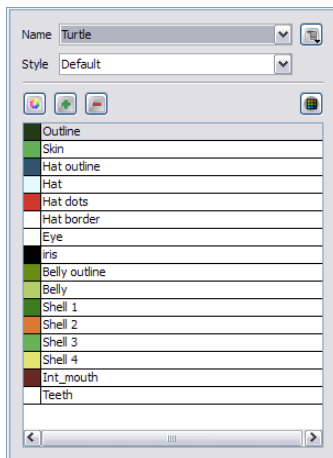
If you import a picture, make sure to import it in a Vector element and not an Image element so that you can erase portions and cut pieces.

Refer to the following chapters to learn more about creating projects, scanning your drawings, importing bitmap images and photos, creating templates and importing templates:

- Starting Your Project - Creating and Opening a Project, on page 22
- Importing Artwork - Scanning Images, on page 157
- Importing Artwork - Importing Bitmaps Images, on page 142
- Importing Artwork - Library, on page 160

## Creating a Colour Palette

Once your drawing is imported into your new scene you will need to create a new colour palette for your puppet, unless, of course, you are using a photograph.

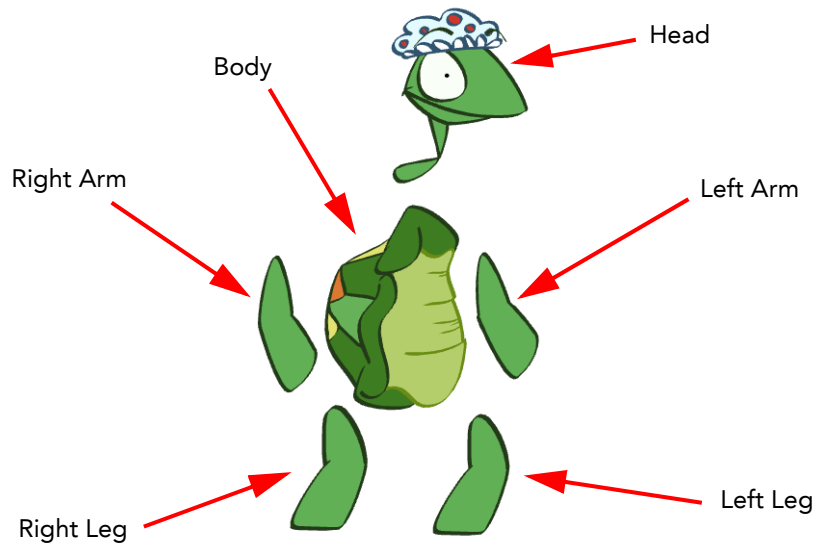


Refer to the following chapter to discover how to create a colour palette for your character:

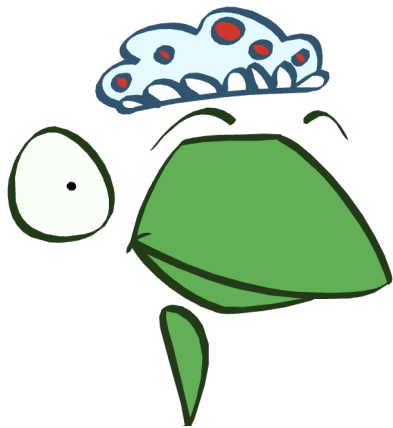
- Adding Colours - Palettes, on page 132

## Cutting the Character into Pieces

To cut up your character into pieces, you must first decide which parts of the final character will move.



If you are building your first puppet, start with a very simple breakdown. Most of the time, you will want to animate the arms, legs and head. It is not necessary to separate all the facial features from the head or to break down the knees and elbows to get a working puppet. You can break the character into six pieces and it will still be enough to produce a nice animation.



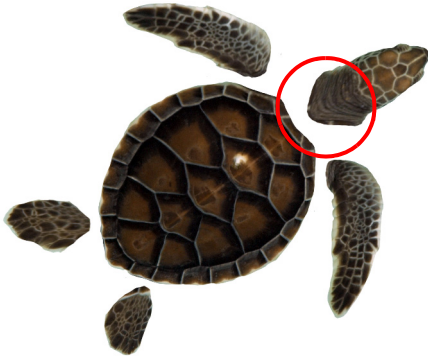
If you feel like extending the amount of articulation the puppet has it's up to you. You can bend the arms and legs, and separate the head into several different pieces to animate the eyebrows and make the eyes blink.

## How to Cut the Pieces

Once you know what you want to animate, it is time to cut the different pieces required for the animation. There are two ways to do so. First, you can use the Cutter and Scissor tools to cut the portion needed and use the drawing tools to complete the missing portion or, if you are not using a photo, you can trace the new pieces using the drawing tools.

### Cutting out your Pieces


You will now learn about cutting parts of your character and completing any missing areas. If you are using a picture, and since Toon Boom Studio mainly edits vector images, you may want to do this process in a bitmap editing software such as Adobe Photoshop.

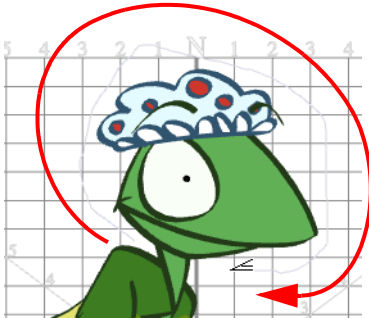



You can use the Show Strokes feature to help you see more clearly the region you will be cutting using the Cutter tool.

- You can display the strokes from the top menu, select **View > Show Strokes**. The default keyboard shortcut is [K].

#### To cut your pieces:

- In the Tools toolbar, select the Cutter  tool.
- In the Drawing view, trace a selection around the part to cut.




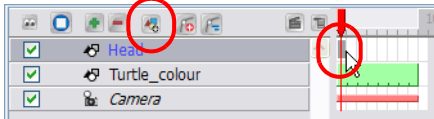
- In the Tools toolbar, select the Drawing Select  tool.
- In the Drawing view, select the cut zone.



- In the top menu, select **Edit > Copy Drawing Object**.






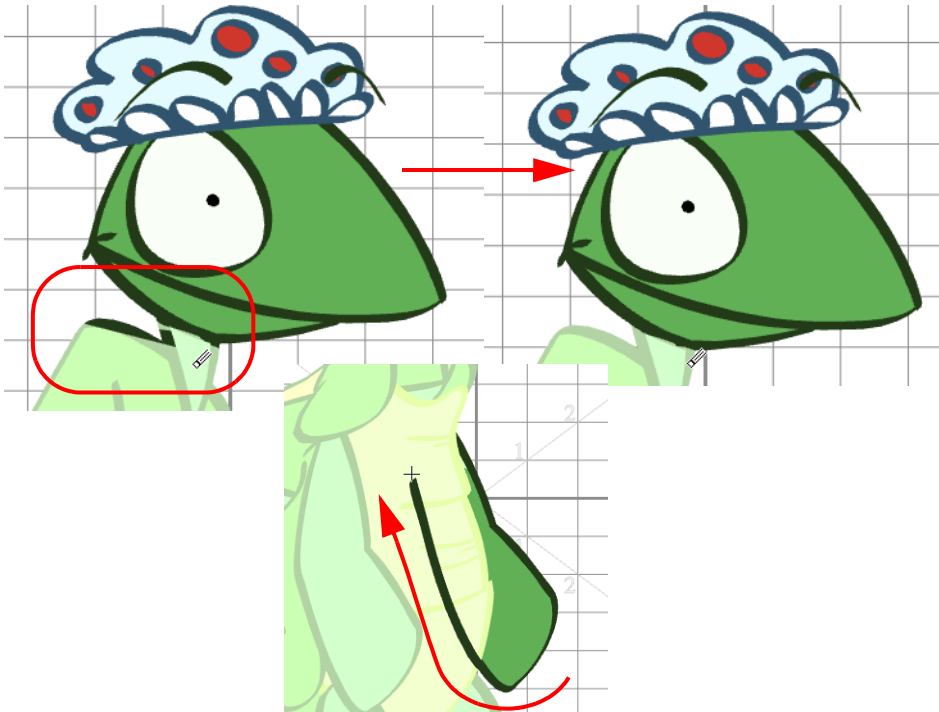
- In the Timeline view, click on the Add Drawing Element  button and rename the new layer corresponding to the new piece you want to create.




- On the right side of the Timeline view, select the new layer's first cell.
- Click on the Drawing view, to activate it.
- In the top menu, select **Edit > Paste Drawing Object**.

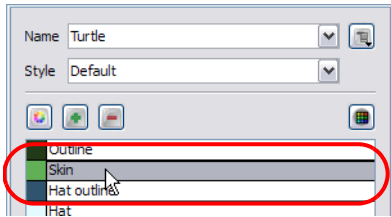


- In the Tools toolbar, select a drawing tool to clean and complete your new drawing. We recommend that you use the Brush  and the Eraser  tools.
- In the Onion Skin toolbar, enable the Light Table  button so you can see your original drawing while you draw.
- In the Drawing view, clean and complete your new drawing. Make sure to draw a complete shape that overlaps the other body parts.

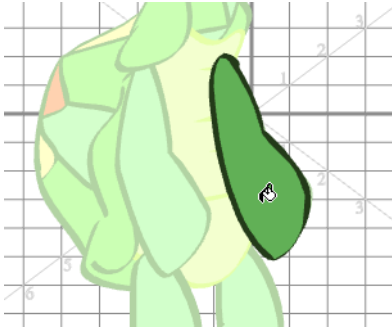


- In the Tools toolbar, select the Paint  tool.

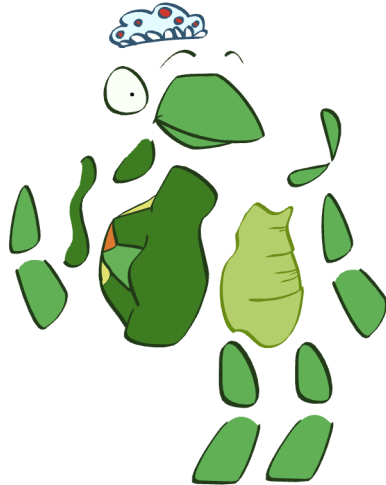
- In the Colour Palette view, select the colour needed.



- In the Drawing view, paint your new drawing.




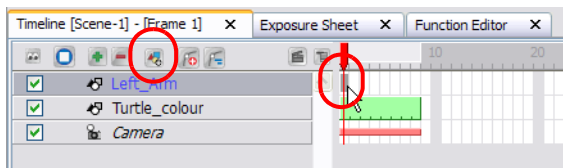
- Save your project.
- Repeat the same process for each new piece to create.





## Drawing your Pieces

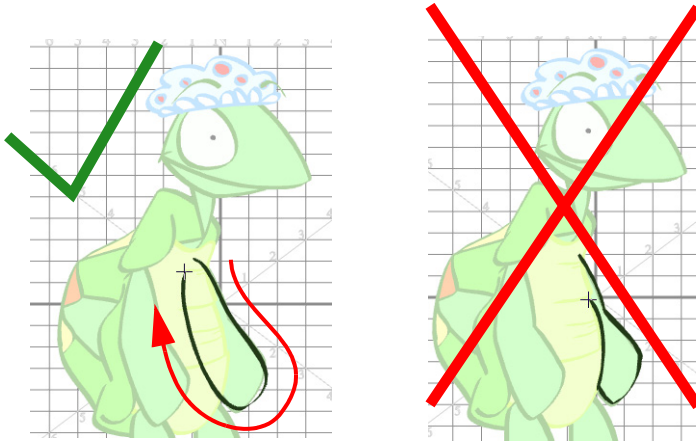
To draw your pieces:


- In the Timeline view, click on the Add Drawing Element  button and rename the new layer corresponding to the new piece you want to create.

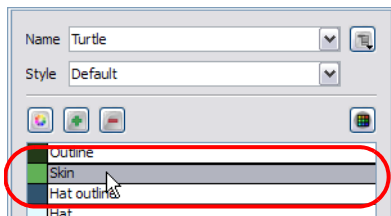


- On the right side of the Timeline view, select the new layer's first cell.
- In the Tools toolbar, select the drawing tool of your choice. We recommend that you use the Brush  tool.
- In the Onion Skin toolbar, enable the Light Table  button to see your original drawing while you draw.

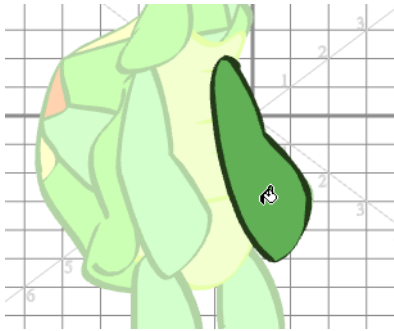
- In the Drawing view, trace the new piece. Make sure to draw a complete shape overlapping with the other body parts.



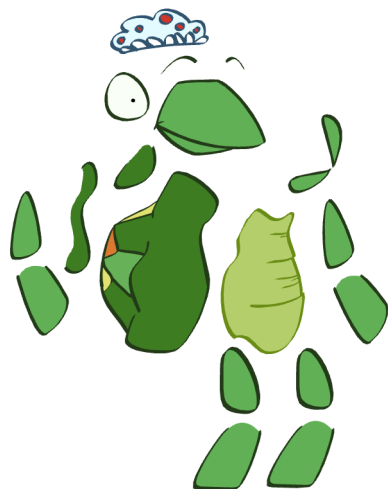
- In the Tools toolbar, select the Paint  tool.
- In the Colour Palette view, select the colour needed.



- In the Drawing view, paint your new drawing.



- Save your project.
- Repeat the same process for each new piece to create.



## Attaching the Pieces



Once all your pieces are completed, it is now time to attach them to each other, the same as you would do with the brass fasteners. To do so, you will connect your layers one to another in the Timeline view.

This process is divided in the following steps:

- Ordering Your Layers, on page 242
- Attaching the Layers, on page 243
- Adding a Master Peg, on page 245
- Setting the Pivots, on page 247

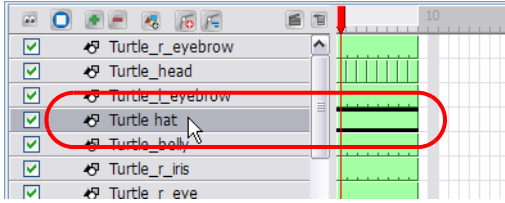
## Ordering Your Layers



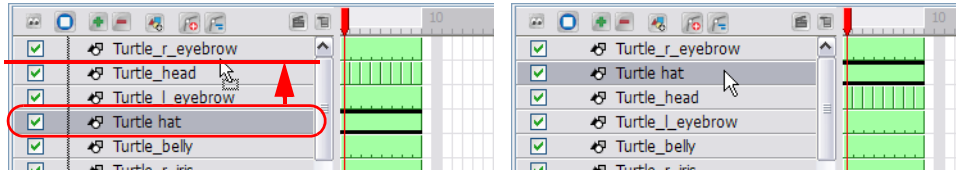
Once you have finished drawing all of your pieces, you may find that your drawings are in the wrong order. Place these pieces in the correct order before attaching your pieces to each other.

**To reorder your layers:**

1. In the Timeline view, select the drawing to bring in front of the others.



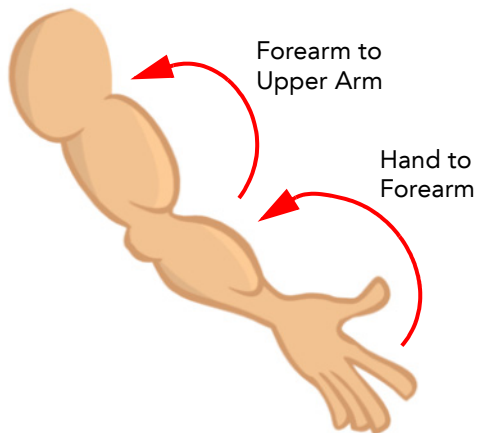
2. Drag the selected layer and drop it BETWEEN the existing layers. Do NOT drop it onto a layer because it will connect them. In this case you do not want to connect them.



3. Repeat the whole process until the whole character is in the correct order.

## Attaching the Layers

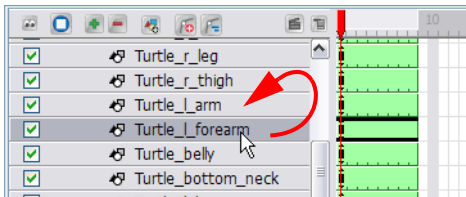
When you animate, you will often want the forearm and hand to follow the upper arm when you select and move it. To do this you must attach the forearm to the upper arm and the hand to the forearm.



To attach a layer to another one, simply drag the layers one onto the other in the Timeline view.

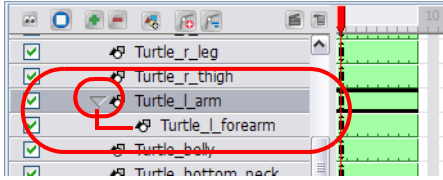
**To attach a layer to another one:**

1. In the Timeline view, select the layer you want to attach to another one. For example, select the forearm layer to attach it to the upper arm.




2. Drag the selected layer ONTO the one you want to attach it to.

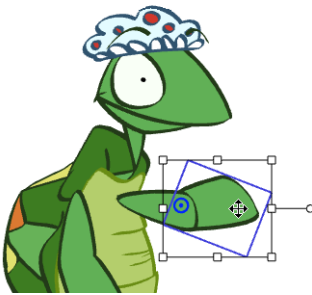
Once the layer is attached to another one, it gets pushed to the right and a Collapsing arrow appears.



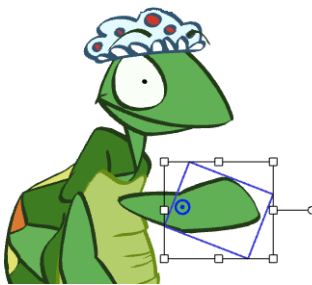
3. If the piece you connected is supposed to be in front of the layer it is attached to, you can push it in front using a keyboard shortcut.



- ▶ In the Tools toolbar, select the Transform  tool.
- ▶ In the Camera view, select the part to bring in front.

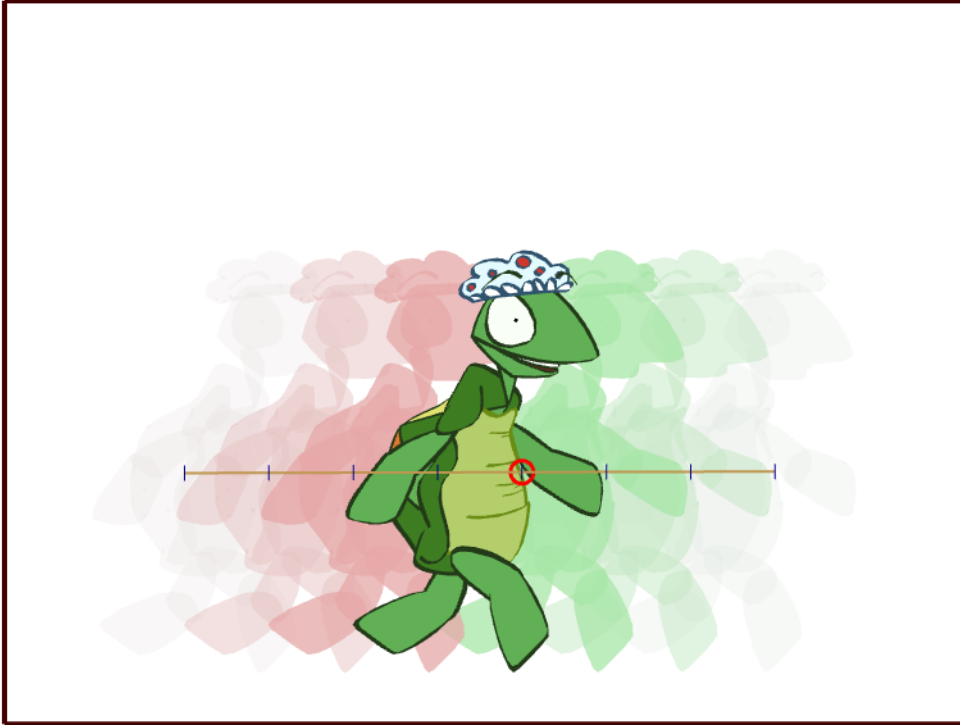


- ▶ Hold down the [Alt] key and press the [Down Arrow] key to nudge the drawing forward. Doing so moves the drawing very slightly forward. If you press on the key several times the drawing will move forward even more. You can also use the [Up Arrow] key to send the drawing backward.




4. Repeat the whole process until every piece is connected.

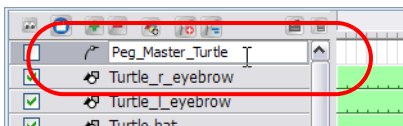
## Adding a Master Peg



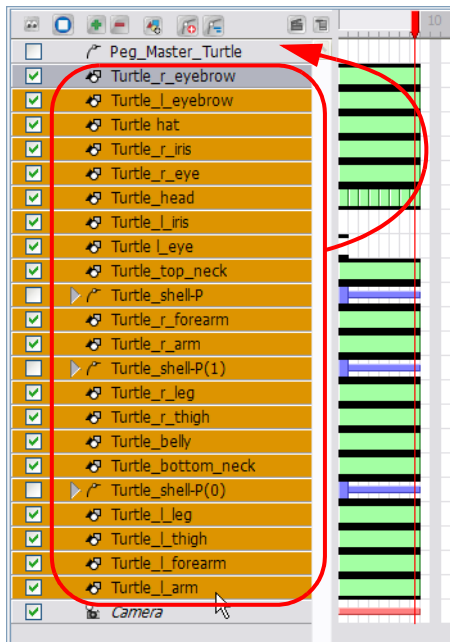
A good element to add to your puppet is a Master Peg. This is a trajectory on which you attach your puppet to make it travel through your scene. It is also used when you want to scale the entire character up or down without doing it on each individual piece. For example, you could animate your puppet walking on the spot then use the Master Peg to get it to move from left to right.

### To add a Master Peg:

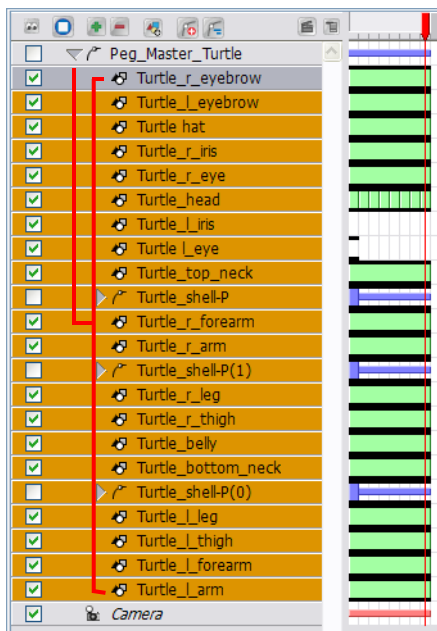
1. In the Timeline view, click on the Add Peg  button.
2. Double-click on the new Peg to rename it. Name it **myCharacterName-Peg**.



3. In the Timeline view, select all your puppet's layers.

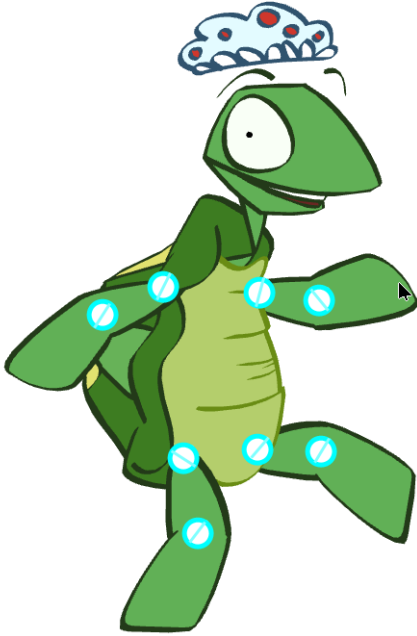


4. Drag the selection ONTO the new Peg.  
All the layers are connected to the peg and moved slightly to the right.






## Setting the Pivots

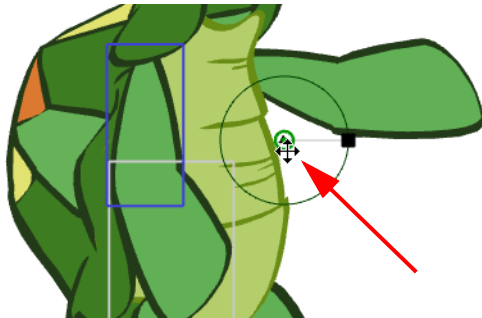


In order for your pieces to rotate properly, it is important to set the pivots at the right location. The pivot is the point from where the body part will rotate, they generally correspond to an articulation. To know where to position a pivot point, think of your own body. If you are moving an arm you will notice that your own arm rotates from the shoulder. So, the pivot point for the puppet arm has to be located at the shoulder. The pivot point for the forearm will be the elbow, etc.

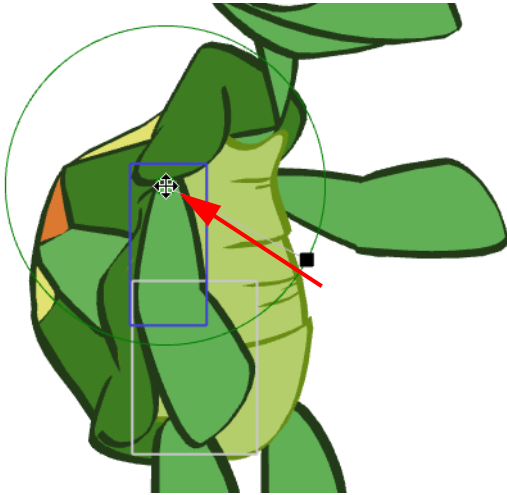
You can apply this technique to anything you want to animate that contains a joint or pivot. For example, if you are animating a spider, study a real spider or a film of a spider moving to determine where you should place the pivot points correctly in your animation.

### To position the pivots:

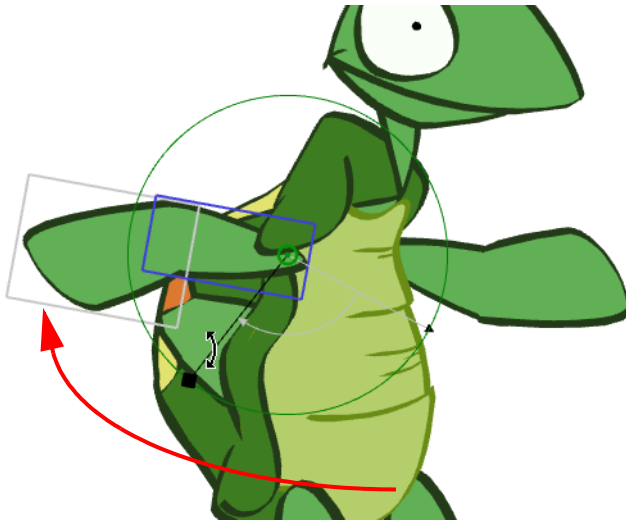
1. In the Sceneplanning Tools toolbar, select the Rotate  tool.
2. In the Timeline or Camera view, select the first layer to set the pivot for.



3. In the Camera view, grab the green pivot point and drag it to its new position.



4. In the Camera view, rotate the part to see if the point is well positioned. If not, relocate it.



5. Repeat the whole process for each piece. Do not forget to set a pivot for the eyes and mouth. This is generally located at the centre of the drawing.

Do not forget to do this for your master peg. Positioning the pivot between the feet is often a good option.

## Storing the Character in the Library

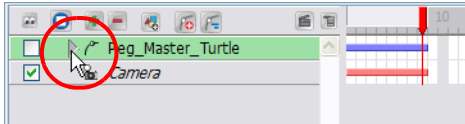
Your puppet is now ready and can be imported into your different scenes to be animated. The best way to reuse your puppet is to store it in the Library as a template. From there, you can open a different scene or project and drag it from the Library into your scene.



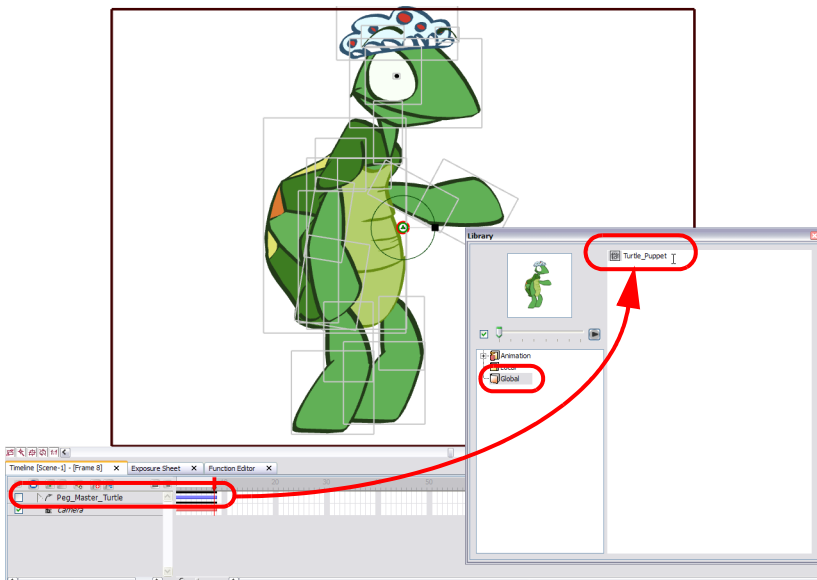
Refer to the *Importing Artwork* chapter to learn more about creating templates and organizing your library.

**To store your puppet in the library:**

1. In the Timeline view, click on the Master Peg's collapsing Arrow button to collapse your puppet.



2. In the left side of the Timeline view, select the puppet's master peg.
3. Drag your selection to the Global Library folder or any other one you may have created for your project.



4. Double-click on the template and rename it with your character's name.
5. Select **File > Save Global Library**.

Your puppet is now completed.

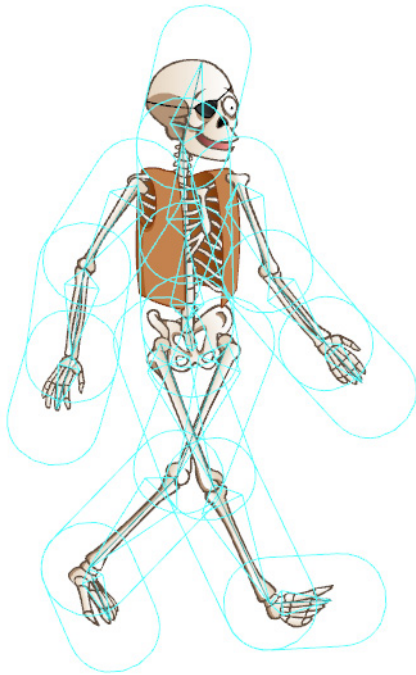
## What's Next?

So far, you have learned about:

- Choosing a Character
- Breaking Down a Character
- Rigging a Character
- Adding a Master Peg
- Setting the Pivots
- Storing the Character in the Library

Next, you will learn how to animate the puppet you just created.

# Chapter 10 Bones



S

The Bones feature in Toon Boom Studio allows you to create a skeleton over your character by using the different Bone tools and then animate it as if it were a body with the Skeleton effect. The skeleton can be used to not only animate vector-based drawings, but also bitmaps.

This chapter is divided as follows:

- About the Skeleton Effect, on page 252
- Choosing Your Character, on page 256
- Adding the Skeleton, on page 258
- Animating the Skeleton, on page 278
- Skeleton Effect Properties, on page 287
- Preferences, on page 289
- What's Next?, on page 290

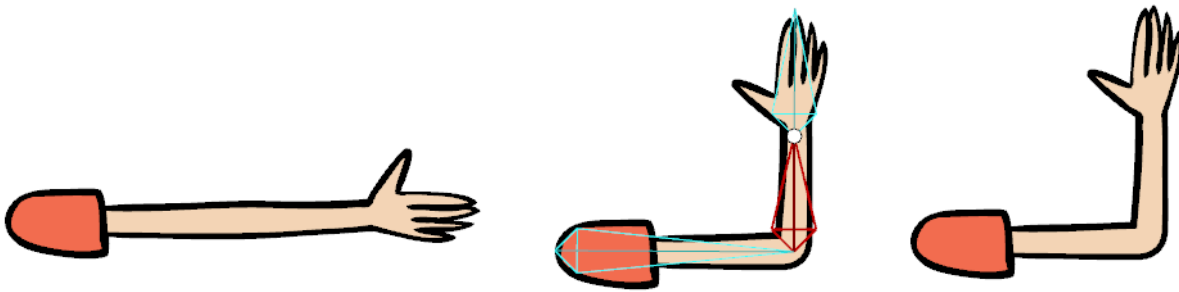


*You can follow the different exercises of this chapter using the different bones templates provided within the software's library!*

*You can find these templates inside the Library view by following this structure:*

- Toon Boom Templates > Bones

## About the Skeleton Effect



The Toon Boom Studio Skeleton effect is used to create an animatable bone structure in a character or design. The structure will let you bend a limb, automatically creating a joint with a distortion of the artwork such as the arm example above. The arm is drawn straight on a single flattened drawing, the skeleton effect automatically creates the elbow joint.

When you animate the arm bending, a keyframe will be created in the Timeline view and the motion will be automatically interpolated (all the drawings between the two keyframes will be created for you) if your keyframes are set to non-constant.



Refer to the following topics of the *Animating a Puppet* chapter to learn more about peg animation concepts:

- *Understanding Keyframes and Drawings*, on page 294
- *Constant and Non-Constant Segments*, on page 298
- *Adjusting the Velocity*, on page 306
- *Using the Onion Skin in Cut-out Animation*, on page 309



Once you gain confidence, you can also use your creativity and try the Skeleton effect on other animatable designs other than limbs to create some interesting distortion effects, like this animated smiling fish!



## Bone Tools Toolbar



By default, the Bone Tools toolbar is located just below the Sceneplanning Tools toolbar on the left side of the application. Use these tools to create, set up and animate your bone structure. You have two types of tools, setup mode tools and an animation mode tool.

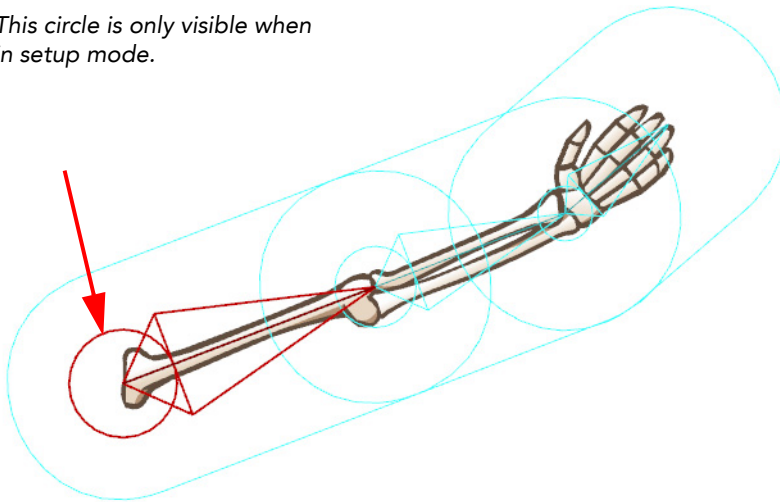
It is very important to understand that when selecting a Bone tool, the camera display and Skeleton Effect will automatically switch to either setup mode or animation mode.

### Setup Mode




The setup mode is active when you are using tools to set up the initial bone structure of the skeleton. Moving bones around with these tools will not create keyframes or animation in the Timeline.

When in setup mode, a large circle appears at the base of your bones.

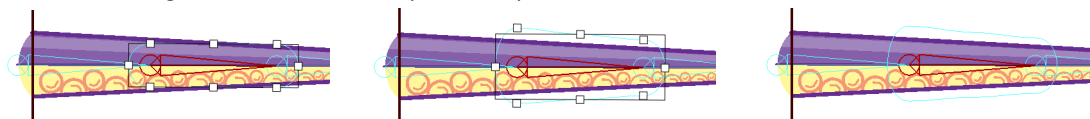
*This circle is only visible when in setup mode.*



These are the setup bone tools, selecting any of these will switch the Skeleton Effect to setup mode:

- 
**Bone Setup tool**  
 This tool is used to position the selected bones on your drawing. Use this tool to drag, rotate and scale a bone or a hierarchy of bones.  
 You can also select this tool using the top menu, select **Tools > Bone Tools > Bone Setup** or use the default keyboard shortcut [J].
- 
**Bone Creator tool**  
 This tool is used to create individual bones. Once a bone is created, it is automatically selected. When a bone is selected, the next bone created will automatically be parented to it, creating a chain. If you want to break the chain in order to create a free-standing bone, or to start a new chain, hold down the [Shift] key as you create.  
 You can also select this tool using the top menu, select **Tools > Bone Tools > Bone Creator** or use the default keyboard shortcut [U].
- 
**Bone Influence tool**  
 The zone of influence is the area around the selected bone that determines what part of the underlying drawing will be influenced by it. This tool is used to modify the size and shape of that area. By default, the zone of influence remains invisible, as the Influence type is set to Infinite in the Tool Properties panel. If the Influence type is changed to Elliptical, the zone of influence will appear as a large ellipse, surrounded by a

bounding box, around the selected bone. The Bone Influence tool can be used to move the square points on the bounding box in order to reshape the elliptical zone of influence.



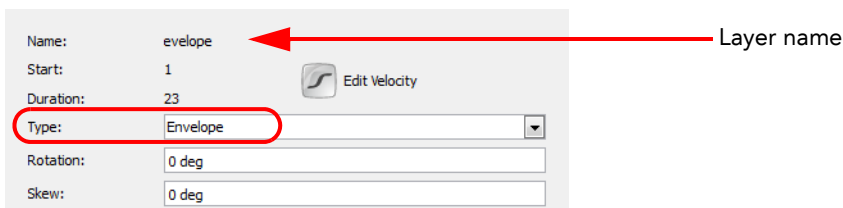
You can also select this tool using the top menu; select **Tools > Bone Tools > Bone Influence**.

- 
**Bone Parent tool**

This tool is used to parent different bone chains to one another. You can also select this tool using the top menu, select **Tools > Bone Tools > Bone Parent**.

- 
**Connect character setup mode**


This tool is primarily used with the Robo-Skeleton templates. Each template has a layer named "Envelope" in its Skin Group. Click the Connect character set-up mode button to see the envelope zones appear and to see the character revert to Set-up mode, where its body parts are typically separated and spread apart. To have this command work with your own creations, create your own templates and set the layer type of your envelope drawing to Envelope in the Layer Properties panel.



You can also select this tool from the top menu by selecting **Tools > Bone Tools > Show-Hide**.

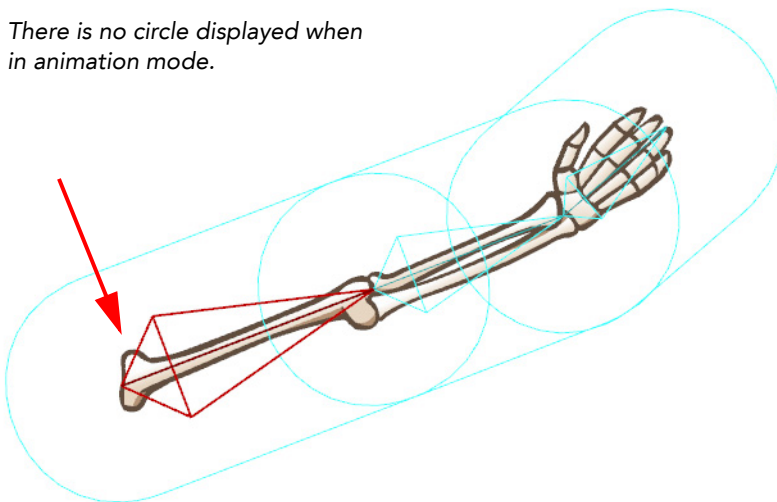
 Refer to the *Adding the Skeleton* topic to learn how to use these tools.

## Animation Mode

The animation mode is automatically active when you select the Bone Manipulator  tool. This means that the Camera view will display the current pose of the bone structure at the selected frame and any manipulation you make will create a keyframe in your Timeline and be animated.

When in animation mode, you will notice that the large circle seen at the base of the bones in setup mode disappears.

*There is no circle displayed when in animation mode.*



- 
**Bone Manipulator tool**

This tool is used to animate your bone structure. You can drag, squash, stretch, rotate or scale a selected bone chain, creating an animation keyframe in your Timeline.



You can also select this tool from the top menu, select **Tools > Bone Tools > Bone Manipulator** or use the default keyboard shortcut [H].

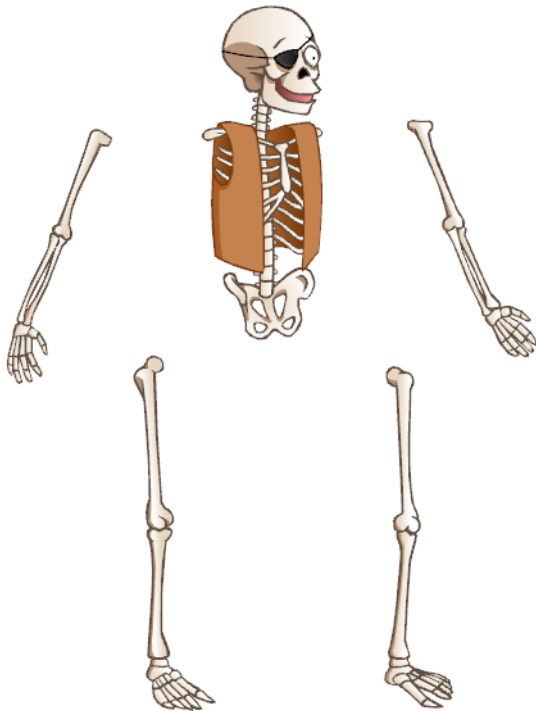


*Refer to the [Animating the Skeleton](#) topic to learn more about this tool.*

## Choosing Your Character

Before building your skeleton, the first thing you need to do is to select and prepare your character. If this is your first puppet, then it is best to choose a simple character. A simple character has two legs, two arms, a head and torso. To begin with, you should avoid a character with loose clothing such as a cloak or baggy pants. As you progress and gain experience creating and animating skeleton puppets, you will learn what to do to optimize your animation and workflow.

We chose a skeleton pirate character to demonstrate how to use the Skeleton effect and Bone tools.



You can also create your character from a picture or a bitmap image, however be sure to vectorize the image when importing, otherwise it will not be editable.



*For more information on importing and vectorizing bitmap images, please refer to the section [Importing and Vectorizing Images](#), on page 145.*

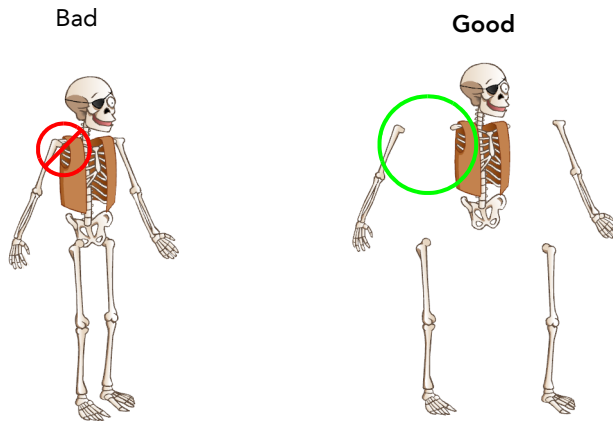


**If you plan to use one of Studio's Robo-Skeleton templates, go to the section [Robo-Skeleton Templates](#), on page 258 to select a template first, then follow the remaining steps to prepare your character.**

## Planning and Preparing Your Character

When choosing and preparing your character, it is recommended that all parts of the character be separated in space. This is to ensure the cleanest movement between character pieces when animating bones affected by elliptical

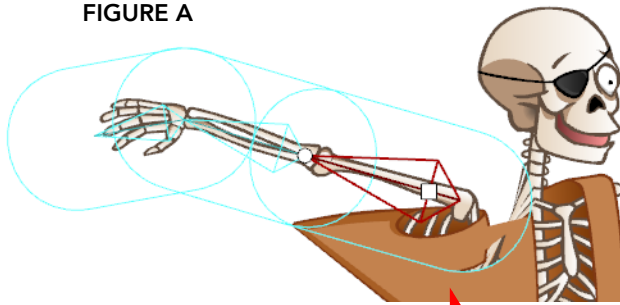
influence areas. It is also recommended that you group each of the separate parts and properly arrange the ordering of these limbs and body groups inside the drawing.



Refer to *Chapter 4: Drawing and Design*, on page 67 to learn about the Drawing tools and options.

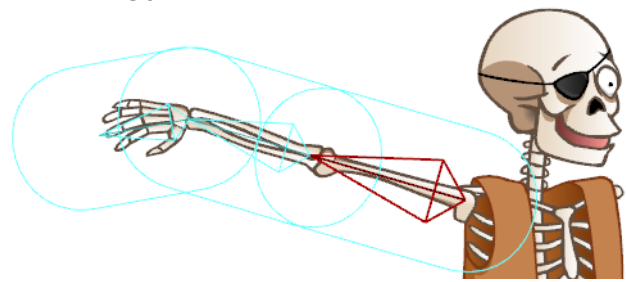
This is an example of what could happen if a character's limbs are overlapping during setup (Figure A), versus one whose limbs were separated from the body during setup (Figure B).

FIGURE A



Note the distortion here...

FIGURE B



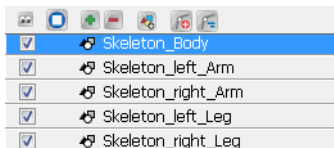
..but not here



Since the Skeleton effect will be applied to any art contained inside a bone's influence area in setup mode, the following happens:

- ⇒ **FIGURE A.** The character's shoulder in this example was overlapping the body at setup. Therefore animating the shoulder will also move any part of the torso that was included in the influence area.
- ⇒ **FIGURE B.** The character's shoulder was not overlapping the torso during setup, so no part of the torso will be influenced by the animation of this bone.

You can have all your character's parts drawn on the same drawing element, or you could also separate the different parts so that each is on a different drawing layer. For example you could have five drawing elements for your character; one for the body and head combined and one for each of the four limbs. Drawing each part on a separate element simplifies the process of ordering the limbs later.



Refer to the *Adding the Skeleton and Animating the Skeleton* topics to learn more.

## Adding the Skeleton

When it comes to adding bones to your drawing or drawings, you have two options to choose from. You can choose one of Studio's pre-made Robo-Skeleton templates that has an animated sequence built-in, or you can build your own skeleton. If you choose to create your own skeleton, you will have the freedom to make your own animated sequences.

- Robo-Skeleton Templates, on page 258
- Building the Skeleton, on page 265

### Robo-Skeleton Templates



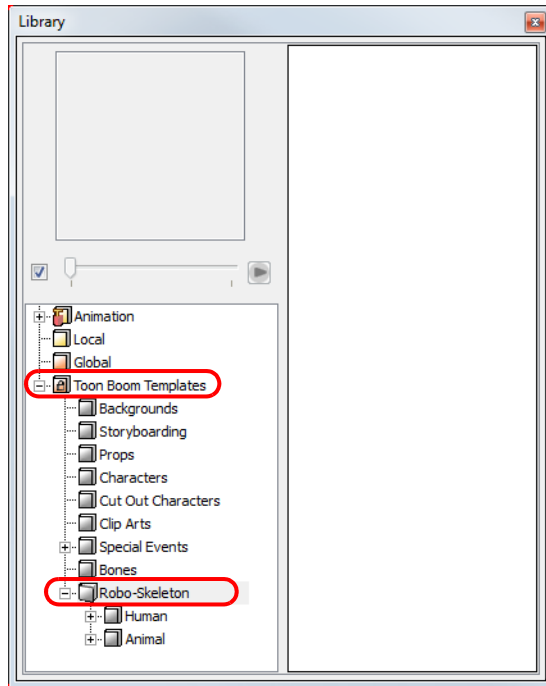
Although creating a character can be fun, the process of animating it with Bones can be a little daunting. Take away some of the work—the setup and animation—by using Studio's pre-made Robo-Skeleton templates. You can easily add your own character artwork to the template and watch it move within minutes.

### Choosing Your Robo-Skeleton Template from the Library

All the Robo-Skeletons are available from the Library. To access the templates, follow the path **Toon Boom Templates > Robo-Skeleton**.



*If you do not see the folder **Toon Boom Templates** in the Library, right-click under the Local and Global library folders and select **Reload Default Templates** from the pop-up menu.*



Inside the Robo-Skeleton folder, you will find Robo-Skeleton templates of both human and animal characters. Each character has its own sub-folder containing templates grouped into front, side and 3/4 poses. See the list below for a more detailed description of the templates:

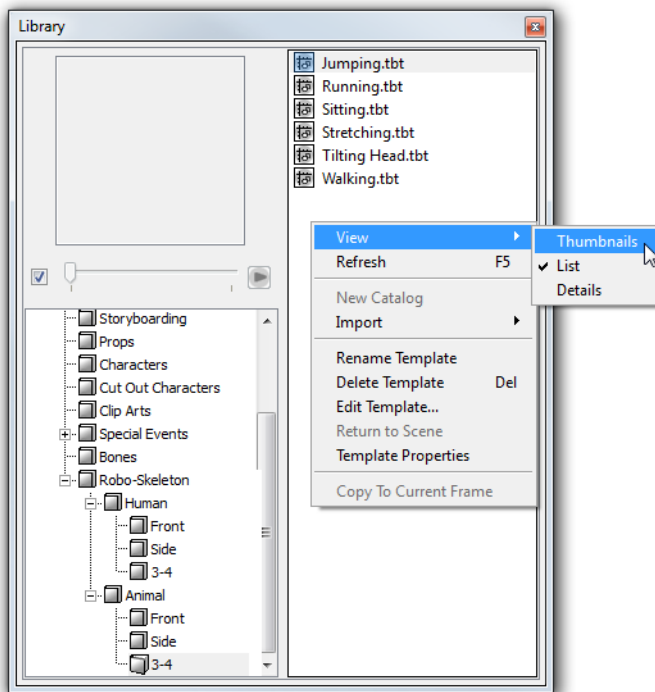
#### Human:

- **Front**
  - ⇒ Jumping
  - ⇒ Jumping Jacks
  - ⇒ Stretching
  - ⇒ Waving
  - ⇒ Dance Move 01
  - ⇒ Dance Move 02
  - ⇒ Dance Move 03
- **Side**
  - ⇒ Jumping
  - ⇒ Running
  - ⇒ Squat
  - ⇒ Walking
  - ⇒ Dance Move 01
  - ⇒ Dance Move 02
  - ⇒ Dance Move 03
- **3/4 View**
  - ⇒ Jumping
  - ⇒ Running
  - ⇒ Squat
  - ⇒ Walking
  - ⇒ Waving
  - ⇒ Dance Move 01
  - ⇒ Dance Move 02
  - ⇒ Dance Move 03

**Animal:**

- **Front**
  - ⇒ Sitting
  - ⇒ Stretching
  - ⇒ Tilting Head
  - ⇒ Walking
- **Side**
  - ⇒ Jumping
  - ⇒ Running
  - ⇒ Sitting
  - ⇒ Sniffing
  - ⇒ Stretching
  - ⇒ Walking
- **3/4 View**
  - ⇒ Jumping
  - ⇒ Running
  - ⇒ Sitting
  - ⇒ Stretching
  - ⇒ Tilting Head
  - ⇒ Walking

To see a thumbnail of the template, right-click in the right section of the Library view and select **View > Thumbnails**.



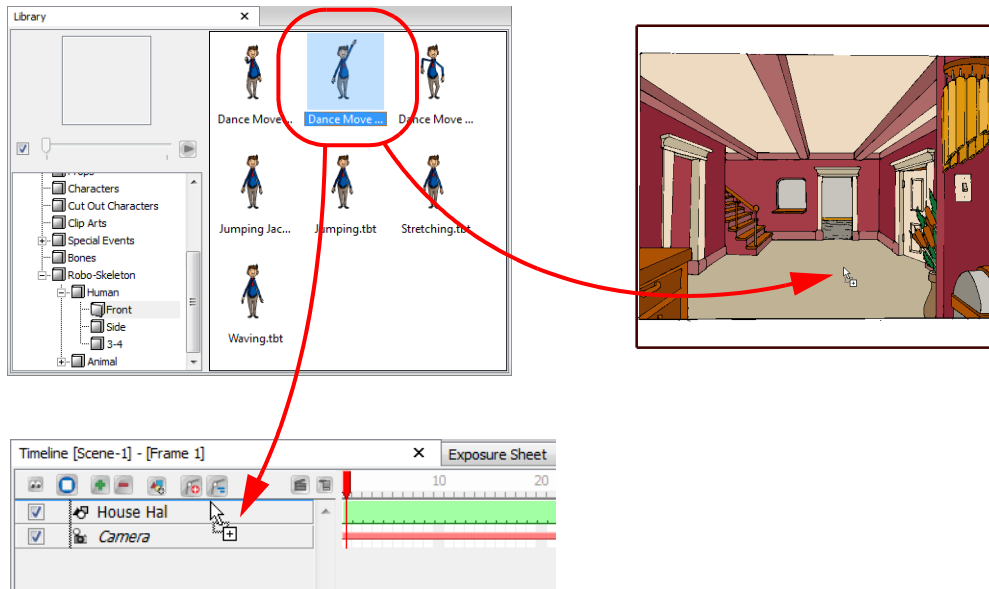
### Importing Your Robo-Skeleton into Your Scene

You can drag a template from the Library view to the Camera view or Timeline view in order to add it to your animation.

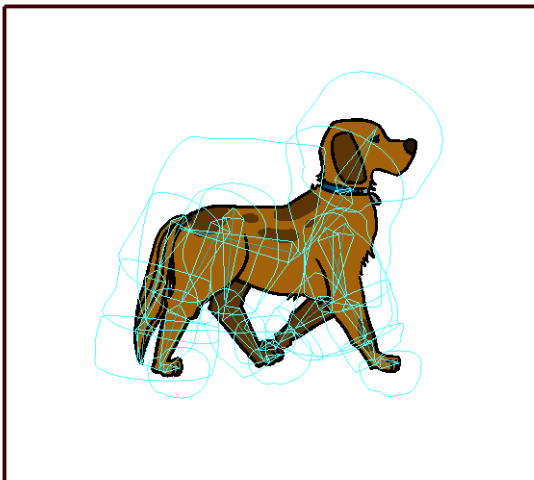
#### To import a template into your scene:

1. In the Library view, select the template you want to import.

2. Drag and drop the selected template in the Camera view or Timeline view's left side.

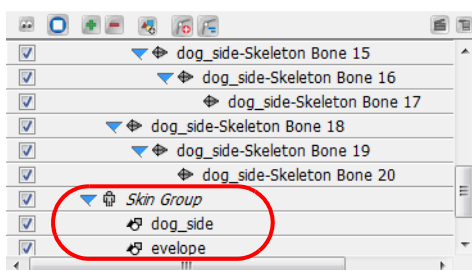


## Adding Your Own Character to the Robo-Skeleton Template




Now that your Robo-Skeleton appears in the Camera view, you have all the pieces necessary to create your own humanoid or four-legged character. This means that you need not use this template as is, but that you can use elements of the template, such as the animation, for your own purposes.

The first thing you need to do is examine the layers included in your Robo-Skeleton template, specifically the Skin Group.




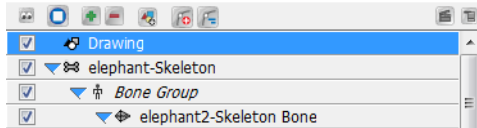
Notice how there are two drawing layers attached to the Skin Group. The first layer, in this case called **dog\_side**, contains all the artwork for the dog that you currently see in the Camera view. The envelope layer, which is hidden by

default, contains drawings of zones surrounding each body part of the character. To view the envelope layer, click on the Connect character set-up mode  button. The envelope zones appear and the character is split apart as you would see it in Setup Mode.

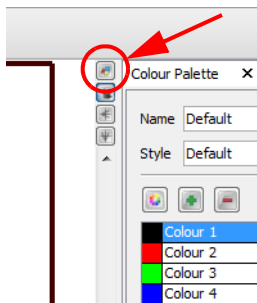
In order to have your character move with the pre-made animation of the Robo-Skeleton template, you need to add your own artwork to the Skin Group to replace the `dog_side` layer. You can do this in several ways, either by creating a new drawing layer, using the envelope zones as guidelines and then creating your own artwork, or by erasing the artwork from the `dog_side` layer and drawing your own artwork directly in that layer.

**To add your own character to the Robo-Skeleton template:**


1. In the Timeline view, click on the Add New Drawing Layer  button to create a new Drawing layer.

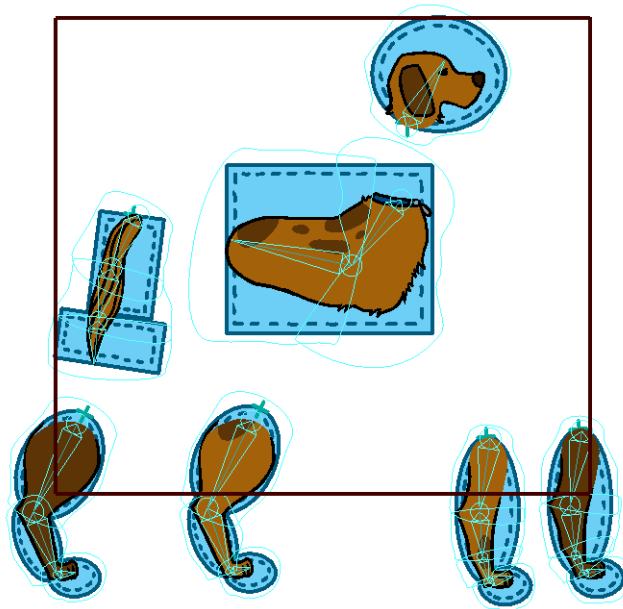


2. Go to the Drawing view by clicking on the Drawing view button on the upper-right side of the Camera view.






OR

If you would like to continue working in the Camera view, click on the Connect character set-up mode  button. This option will also automatically display the envelope zones.



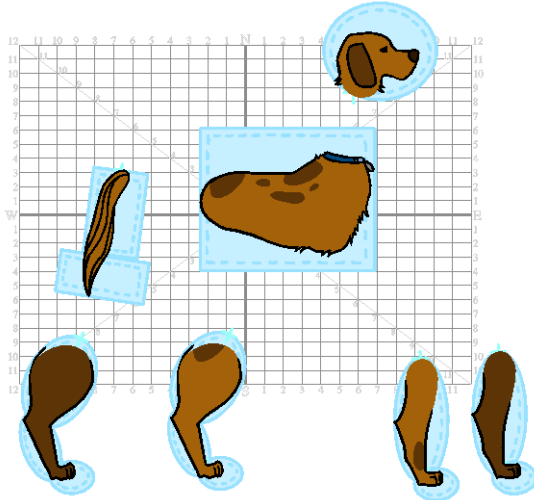
Result in the Camera view when using the Connect character set-up mode button

Use either the Erase  tool or the Select  tool in combination with the [Delete] key to get rid of the current artwork on that layer.

3. If you are working in the Drawing view, turn on the Light Table by clicking on the Auto Light Table  button, found in the Onionskin toolbar located at the top of the application.



You should now see the envelope image in washed out colours in the Drawing view. You might notice that it does not look as it did in the Camera view; some of the limbs of the character may be detached and spread out.

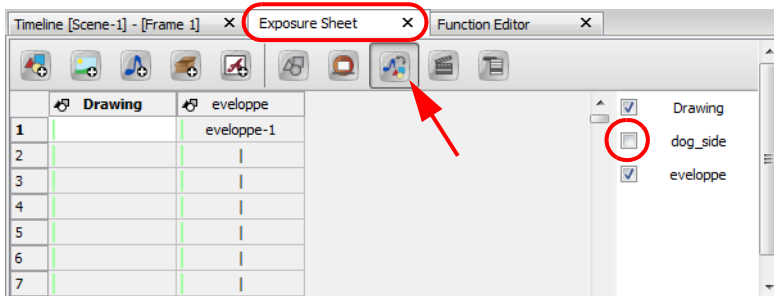


As is the case with the dog, when the character is whole, two of the legs are partially hidden behind the rest of the body. This would also happen to the image of a human character in profile; one arm and one leg would be hidden. In order to fix problems like this, all the limbs are separated and then reattached to the body in the Bone setup stage (which is already done for the Robo-Skeleton templates), so that all the body parts can move independently.

4. If you are working in the Camera view, in the Timeline view, hide (uncheck) the current Skin Group art layer. In this case, it is the `dog_side` layer. Leave the envelope layer enabled.

OR

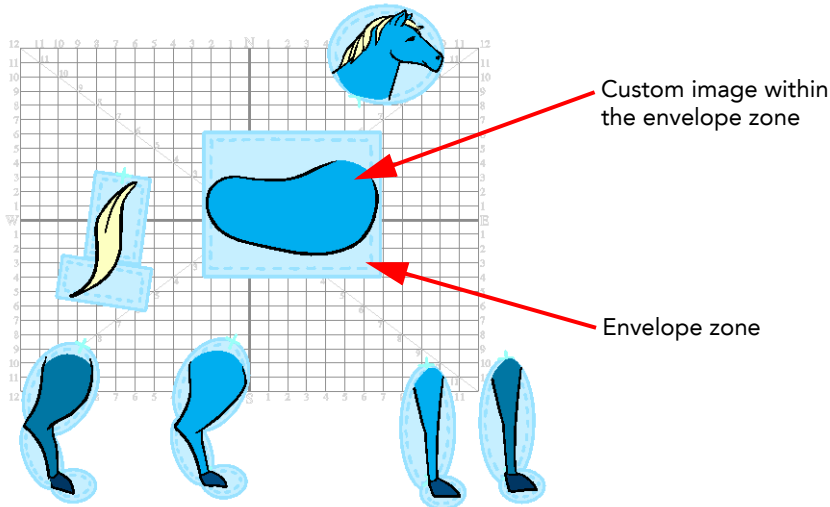
If you are working in the Drawing view, in the Exposure Sheet view, click on the Toggle Element List button and then hide (uncheck) the current Skin Group art layer. In this case, it is the `dog_side` layer. Leave the envelope layer enabled



*Instead of hiding the Skin Group art layer, you could simply delete its contents and then create your own artwork directly on it.*

5. In the Drawing or Camera view, import and vectorize an image, or use the drawing tools to create your own version of the chosen character type on the new layer. If you import an image, you can use the drawing tools to

cut it up, as long as it is vectorized. You must also scale the pieces and place them in the correct location, over their corresponding envelope zone. In either case, be sure to stay within the envelope zone limits.

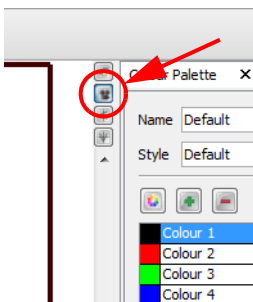


For more information on how to create your own artwork, please refer to the chapter *Drawing and Design*, on page 67.

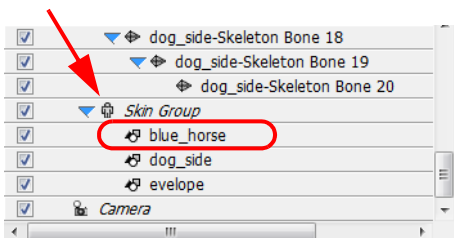




For more information on how to import bitmap images, please refer to the section *Importing and Vectorizing Images*, on page 145.

6. In the Timeline view, rename the drawing layer to something appropriate and extend the exposure of the drawing for the total length of the animated sequence. You can do this either by:
  - ▶ Right-clicking on the frame that you want to extend the exposure to and selecting **Extend Exposure** from the pop-up menu.
  - OR
  - ▶ Clicking on the frame that you want to extend the exposure to and using the keyboard shortcut [Ctrl]+[Shift]+1 (Windows) or [⌘]+[Shift]+1 (Mac OS X).
7. If you are not already there, return to the Camera view by clicking on the Camera view button on the right side of the Drawing view.

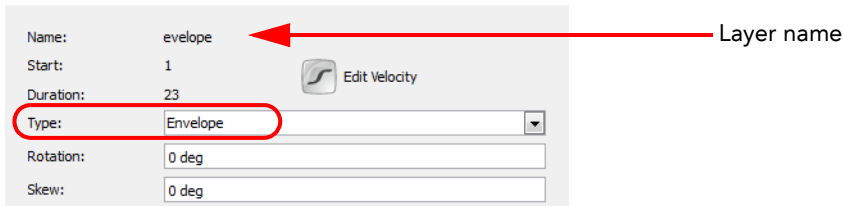


8. If you did not draw directly on the old Skin Group art layer, then in the Timeline view, select your character artwork layer and drag and drop it over the Skin Group layer.

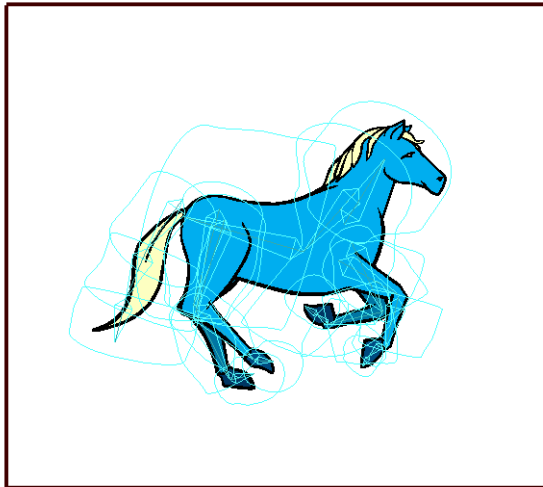


9. If you did not create your new character artwork on the old Skin Group art layer, either hide the old Skin Group art layer or delete it from the Timeline view entirely.
10. Hide the envelope by disabling the Connect character set-up mode  button from the Bones toolbar. The envelope disappears and the Robo-Skeleton character appears reassembled. If it does not reassemble automatically, you may have one of the Bone setup tools selected. In this case, click on the Bone Manipulator  tool.


As a test, click on the envelope layer and then take a look at the Layer Properties panel. You will notice that the Type is set to the Envelope state. Any layer that is set to the Envelope state through the Properties panel can be controlled by the Connect character set-up mode button.



If your envelope layer is selected in the Timeline view, then you will see it in the Camera view, even if the Connect character set-up mode button is disabled.



Your character is now connected to the Robo-Skeleton template and appears in place of the generic envelope.

11. In the Playback toolbar, click on the Play  button to watch the pre-made animation as it now appears, connected with your character artwork.



If your artwork appears warped when animated, you may need to tweak the Zones of Influence or the Bone Setup. For further information on Zones of Influence, please refer to *Setting the Influence Area*, on page 272. For further information on bone setup, please refer to *Setting Up the Bones*, on page 269.

## Building the Skeleton



Once your character design is ready, you can start building the structure of the puppet's skeleton. Here are the different steps and tools:

- Adding Bones, on page 266
- Setting Up the Bones, on page 269
- Setting the Influence Area, on page 272
- Parenting Bone Chains, on page 275

## Adding Bones

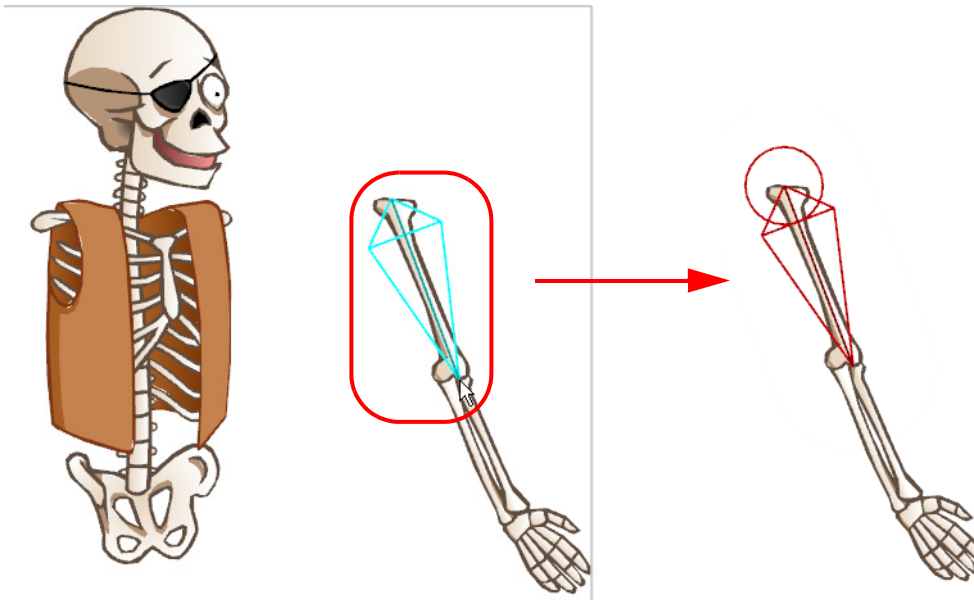
There are two different ways that you can add bones to your artwork. The fastest and easiest way is to select the layer with your artwork, and then select the Bone Creator tool. Your last step will be to simply create bones on top of your artwork. You can also add bones through the Timeline. The two methods are described below.

### To add bones to your character:

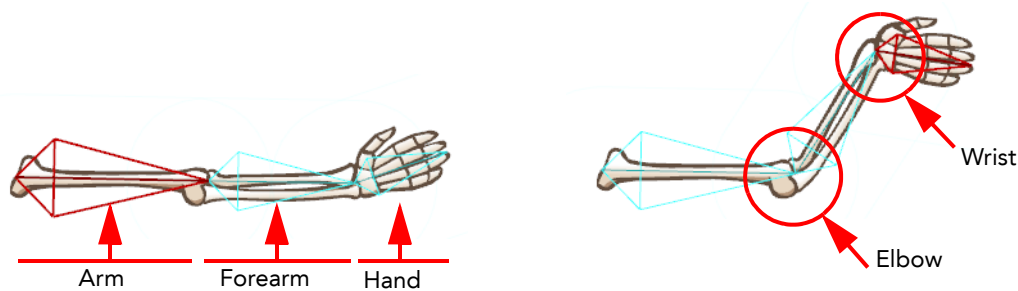
1. Make sure you are working in the Camera  view.
2. In the Timeline view, select the layer with your artwork on it.
3. From the Bone Tools toolbar, select the Bone Creator  tool. You can also use the keyboard shortcut [U].
4. Take a look at your character or object and try to decide which parts will be at the back, in other words, hidden behind other parts. Those are the parts that you should start creating bones for first.

The bones and bone chains that are created first will be at the bottom of the Timeline layer stack when you are finished; therefore, they will be located at the bottom of the visibility hierarchy.

5. In the Camera view, click and drag to create the first bone, following your design.

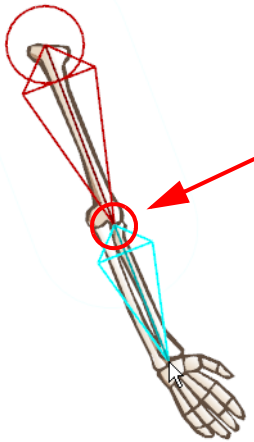


When creating your bone structure, think about where you want the image to bend. In this example, we would like two bends (one at the elbow and one at the wrist), therefore we should create three bones (the arm, forearm and hand).



*If you do not position the bone perfectly the first time, you can fix it later using the Bone Setup tool. Refer to the [Setting Up the Bones](#) topic to learn how.*

- Once you have created a bone, it automatically becomes selected. A selected bone appears red in colour. The next bone you will create will automatically be linked and parented to the currently selected bone. This creates a chain linked by a joint.



You must create your first bone by clicking to determine its start position, dragging the mouse to extend the bone length and releasing the mouse at the desired end point. Every subsequent bone can be created by clicking the mouse at the next end point. In this example, we clicked at the wrist to create the second bone.

- Once you have created a full bone chain for one limb, for example, hold down the [Shift] key to start a new free-standing bone or bone chain for a different part of your character or object.

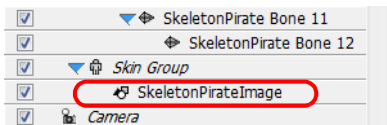


Be sure to let go of the [Shift] key if you want to create a connected chain, otherwise, you will accidentally create a series of unconnected bones.

- Take a look at the Timeline view. As you create a bone chain, you will notice that a new bone layer is automatically added for each bone in the chain under the Bone Group. The bones in a chain are organized in a hierarchy, while free-standing bones are found just below the main Bone Group.

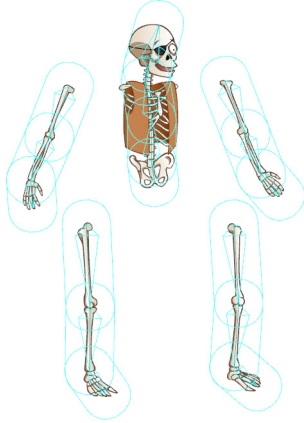


You will also notice that the drawing layer with your character or object artwork has automatically been connected to the Skin Group of your new Skeleton effect group. This auto-parenting occurs because you started creating your bones with this layer selected.



Refer to the *Layers and Timing* chapter to learn more about layers.


Your character's bone structure is now complete. Notice how the bones of the body parts, including the body of the character, are independent from each other. They are all separate bone chains, totally unconnected.

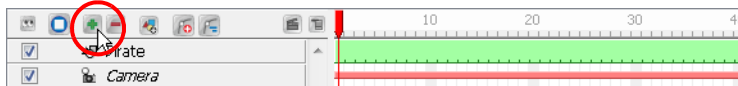


### Adding Bones from the Timeline View

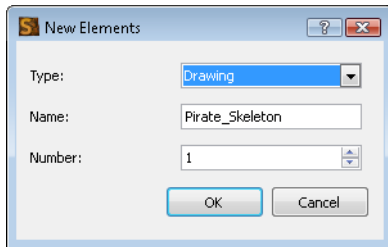
Another way to add bones to your artwork is to add a Skeleton Effect to your Timeline view and then connect your character's artwork to it.

**To add a Skeleton effect:**

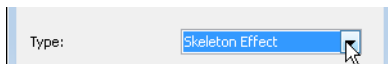
1. In the Timeline view, click on the Add New Elements  button.



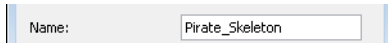
The **New Elements** dialog box opens.



2. From the Type drop-down menu, select Skeleton Effect.

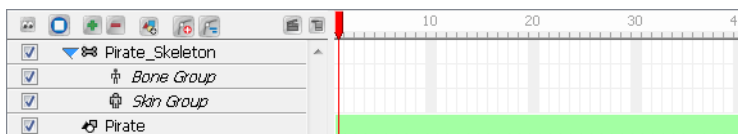


3. In the Name field, give a name to the Skeleton Effect element.

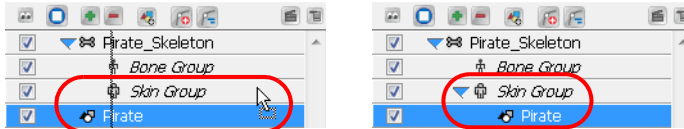


4. Click on the OK button.

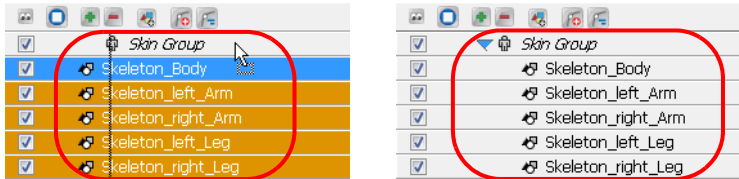
The Skeleton Effect appears in your Timeline view.



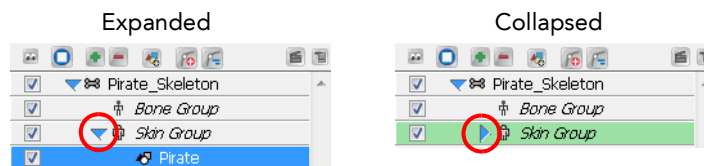
5. Select and drag the drawing layer containing your character onto the Skin Group. This is where you connect any art layer that you want to be influenced by the bones.  
Make sure to drop the drawing layer directly on the Skin Group to parent it to the Skin Group.




If your character's parts are drawn on different elements, make sure to parent all the drawing elements to the Skin Group.

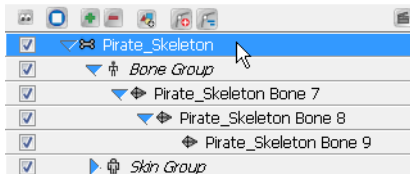


Once layers are parented in the Timeline view, you can click on the blue triangle icon at the head of a group to collapse or expand the group. This is useful when the Timeline view becomes filled with layers.



You can add any drawing layer to the Skin Group or remove any drawing layer from it at any time. You can also save a bone structure in your library as a template and then reuse it with other character designs! Refer to Chapter 6, *Importing Artwork - Library*, on page 160 to learn more about using the Library view.

6. From the Bone Tools toolbar, select the Bone Creator  tool. You can also use the keyboard shortcut [U].
7. Take a look at your character or object and try to decide which parts will be at the back, in other words, hidden behind other parts. Those are the parts that you should start creating bones for first.  
The bones and bone chains that are created first will be located at the bottom of the Timeline layer stack when you are finished, and therefore will be at the bottom of the visibility hierarchy.
8. In the Camera view, click and drag to create the first bone, following your design.
9. Once you have created a bone, it automatically becomes selected. A selected bone appears red in colour. The next bone you will create will automatically be linked and parented to the currently selected bone. This creates a chain linked by a joint.
10. Once you have finished creating the bone structure on a first limb, in the Timeline view, select the top layer of the Skeleton Effect; this will let you start the bone structure for the next limb. Then, repeat steps 8 and 9 until a bone structure is created for each of the body parts.



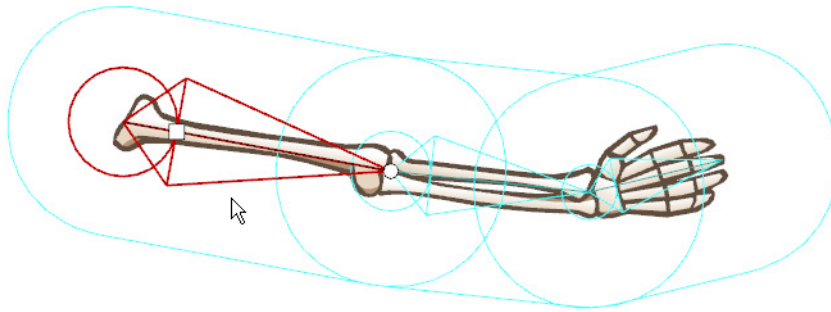
## Setting Up the Bones

Once you start creating bones you can, at any time, modify them in setup mode to optimize their positioning without creating an animation.

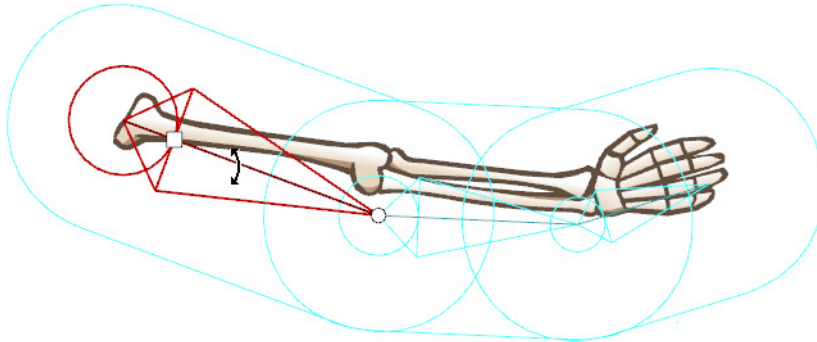
**To modify bones using the Bone Setup tool:**

1. From the Bones Tools toolbar, select the Bone Setup  tool. You can also use the keyboard shortcut [J].
2. In the Camera view, select the bone you want to modify.

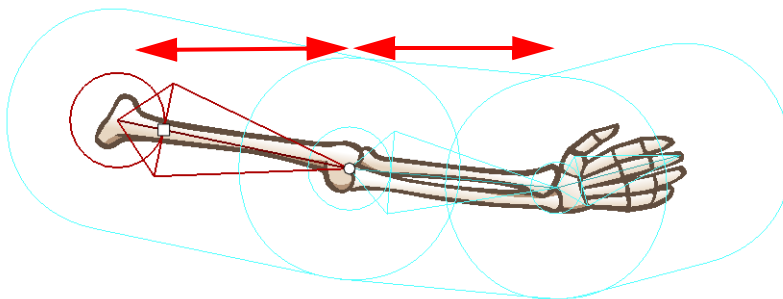
The selected bone becomes red and two control handles appear.



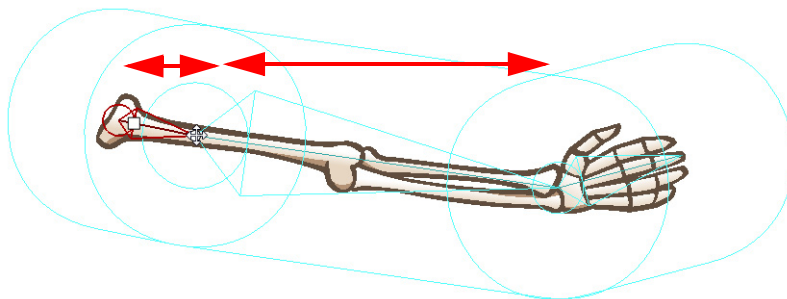
- ▶ To rotate the bone, place your cursor over the bone until you see the rotation cursor. Click and drag to rotate the selected bone. You can change the rotation angle of any bone in the chain.



- ▶ To shorten or lengthen the bone, click on the round handle at the tip of the bone and either drag it towards or away from the root of the bone. You can lengthen or shorten any bone in your chain. You can also rotate as you scale, creating two transformations in one step.

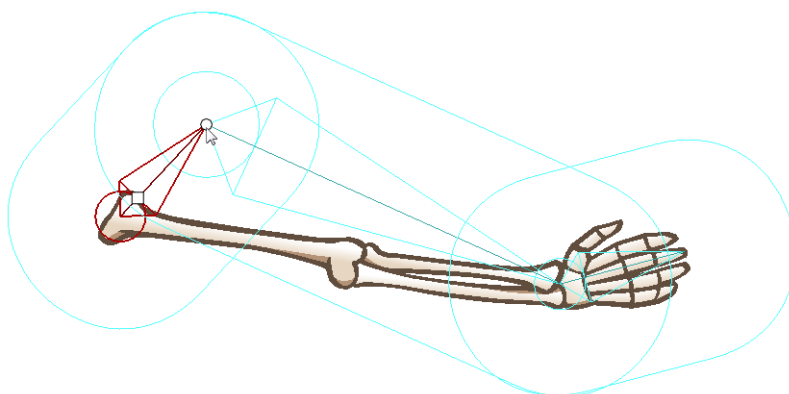


Original bone chain



Note how the scaled bone affects the length of the bone directly connected to it, but not any subsequent bones further down the chain



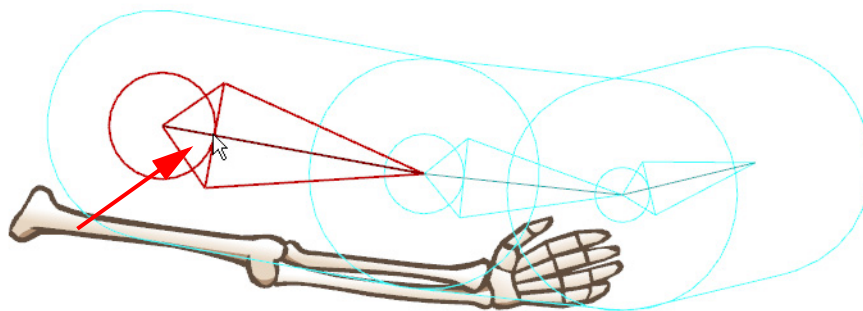


Note how the scaled and rotated bone affects the length and rotation of the bone directly connected to it, but not any subsequent bones further down the chain

- ▶ To reposition the bone, click on the square handle and drag it to the desired position.



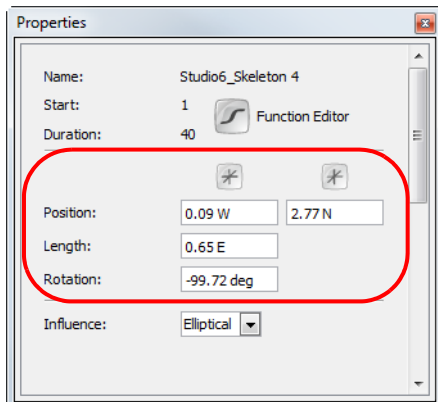
You should only reposition the first parent of the bone chain to avoid creating gaps in your joints that could result in an unwanted distortion of the art.



You can also use the Properties view to define the position of a selected bone.

#### To modify bones using the Properties view:

1. In the Camera view or Timeline view, select the bone you want to modify. Its position values appear in the Properties view.



2. In the Properties view:
  - ▶ **Position:** Enter the E/W and N/S values to set the position of the selected bone. You should not reposition a bone that is not the first parent. This will prevent gaps from forming at the joint area, creating an unwanted distortion of the art.
  - ▶ **Length:** Enter a value to set the length of the selected bone. You can resize any bone from the chain.
  - ▶ **Rotation:** Enter the number of degrees to modify the rotation angle of the selected bone. You can change the rotation angle of any bone from the chain.

### Resetting the Position of a Bone


You can reset the position of a selected bone at any time using the Properties view. You can also reset the selected bone's position and rotation values to default.

#### To reset the position of bones:

1. In the Timeline view, select the bone you want to reset.
2. In the Properties view, set the Position and Rotation values to 0.
3. Repeat these steps for any other bones which you need to reset the position of.

You can also use the Reset option to reset both the bone positions and keyframes simultaneously.

#### To reset the position of bones and clear keyframes:

1. In the Timeline view, select the bone element you want to reset. You can perform a multi selection and reset the position of multiple bones at the same time.
2. In the Timeline View  menu, select Reset. You can also right-click (Windows) or [Ctrl] + click (Mac OS® X) in the right or left section of the Timeline view and select Reset from the pop-up menu.

### Setting the Influence Area

The influence area is the zone that defines which art will be included in the Skeleton effect and will be distorted when animated.

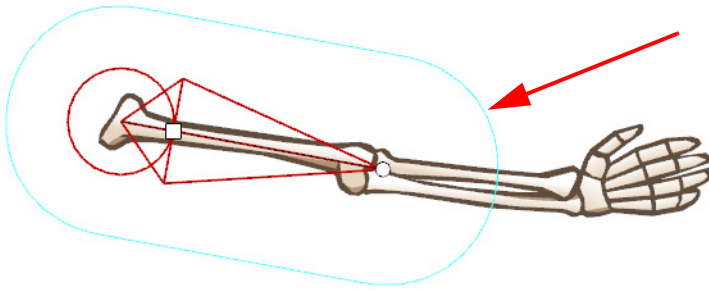
Once you setup the bone structure, you need to adjust the influence area of your bones.

This topic is divided as follow:

- Influence Area, on page 273
- Elliptical or Infinite Influence Areas, on page 273
- Modifying the Size and Shape of the Influence Area, on page 274

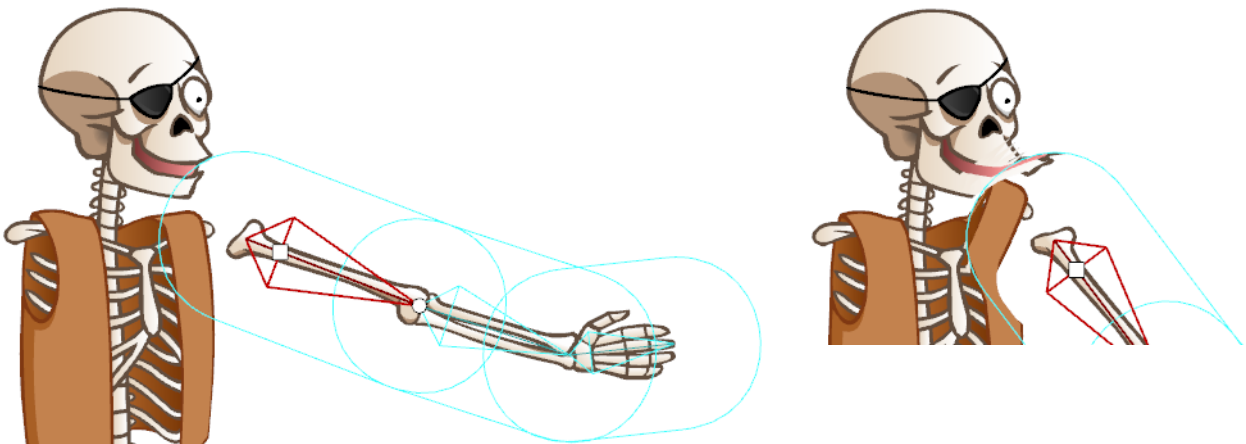
## Influence Area

By default, the influence area is set to Infinite. An Infinite zone of influence does not have a visual representation in the Camera view, therefore it appears to be invisible. To give you a general idea about an influence area, let's talk about it in terms of an Elliptical zone of influence, which appears as a large ellipse surrounding the length of each bone.

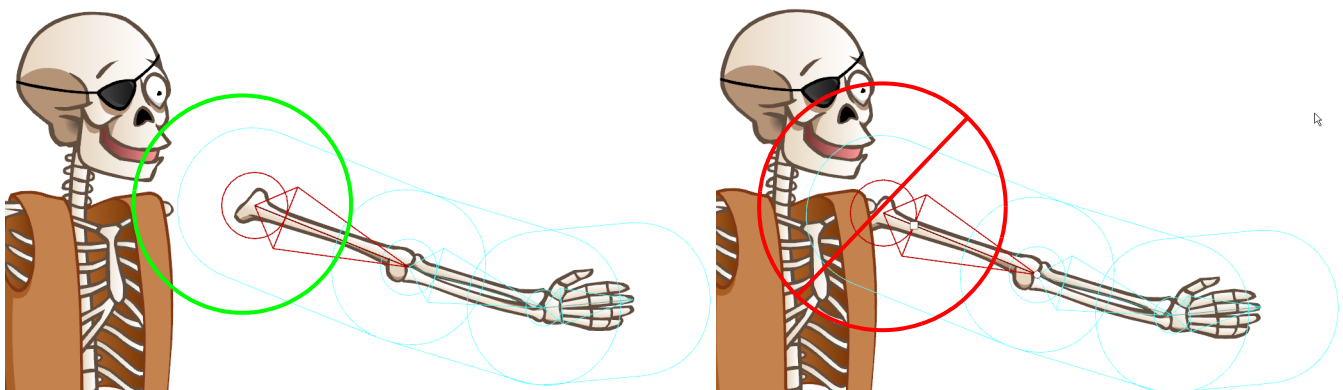


The influence area determines the boundaries of the effect that a bone will have over artwork that lies within those boundaries.

Any art on a drawing layer that is connected to the Skin Group and appears inside the bone influence area, will follow the movement of that animated bone.

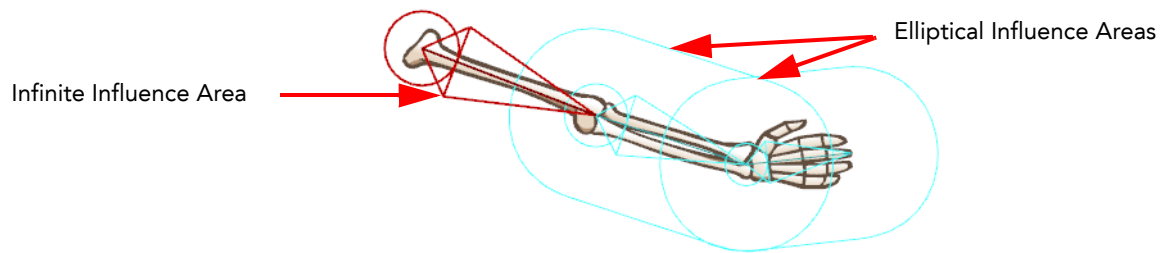


When setting the influence area around your bones, you must make sure that no unwanted art is included in the area. Any unwanted art included in a bone influence area will follow the animated bone and become distorted.



## Elliptical or Infinite Influence Areas

There are two types of influence area possible for a selected bone; the Elliptical and the Infinite.




### Infinite

By default, the influence area is set to Infinite. The entire art which is part of the Skin Group and which is not contained inside the Elliptical influence area of another bone, will move with the selected bone. If two bones have an Infinite influence type, then they will influence the artwork up to where they meet, in other words, up to the joint.

### Elliptical

You can set the influence area type for a selected bone to Elliptical using the Properties view. When set to Elliptical, an ellipse appears in the Camera view around the selected bone. An Elliptical influence type means that an ellipse shape determines the boundaries inside which art will be influenced by the selected bone animation. This area can be

redefined using the Bone Influence  tool or Properties view.



*Note that if two influence areas overlap, the bone which is situated lower in the Timeline view's ordering is the one that will take precedence over the other. Therefore, the influence area of the bone which is situated higher in the Timeline view's layer stack, will have no influence over the overlapping area.*




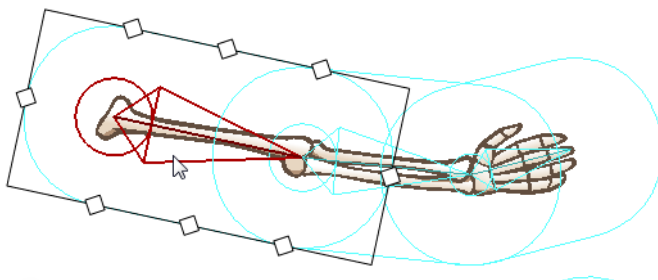
Refer to *Modifying the Size and Shape of the Influence Area* to learn how.

## Modifying the Size and Shape of the Influence Area

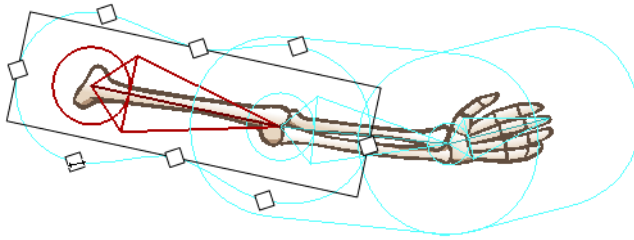
If you set the influence area of a bone to Elliptical, meaning it is bound within an ellipse shape, you can modify that shape. To modify the size and form of the ellipse, simply manipulate the square points around its bounding box.

### To modify the influence area using the Bone Influence tool:

1. From the Bone Tools toolbar, select the Bone Influence  tool.
2. In the Camera view, select the bone whose influence area you want to modify.  
The selected bone appears as red and a black bounding box is displayed around the influence area.




3. Click and drag the square points to resize or reshape the influence area.




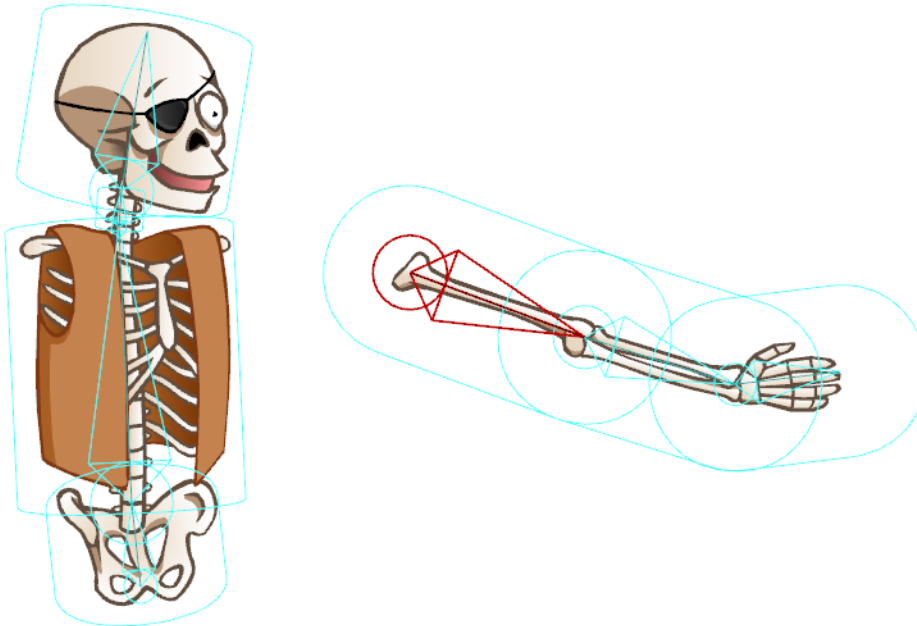
## Parenting Bone Chains

Once you create the several bone chains for your character's limbs and body, you can connect them all by parenting them. This unifies the character and, if you want to, allows the limbs to follow the movements of your character's body.

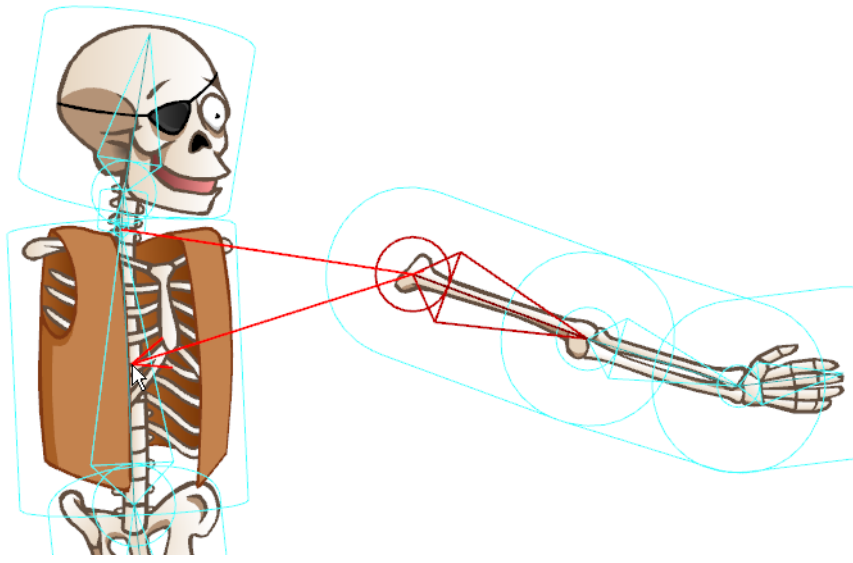
This step is very simple, as you only use a single tool, the Bone Parent  tool.

**To parent bone chains:**

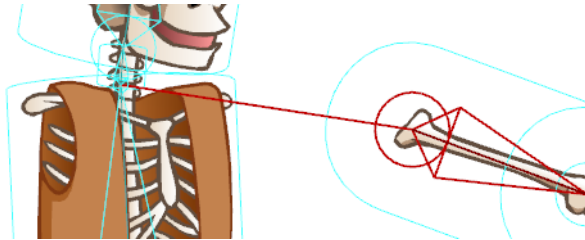
1. From the Bone Tools toolbar, select the Bone Parent  tool.
2. In the Camera view, locate the bone which is the starting point of the limb you want to parent to another chain. In this example, the arm will be parented to the body of the Skeleton.



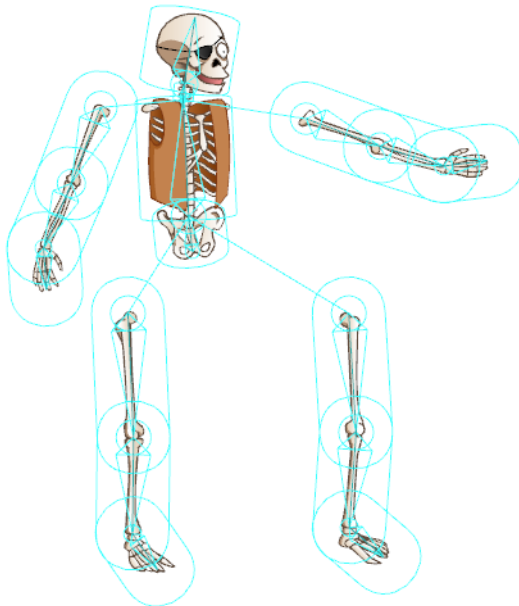
3. Click on the base of the limb bone and then drag the cursor to the bone you want to parent it to. You will notice a red arrow pointing in the direction you drag it. When a straight line appears beside it, it means that it is ready to connect to the selected bone.



4. Release the mouse to complete the connection.




5. Repeat Step 2 to Step 4 until all your limbs are parented to the body.

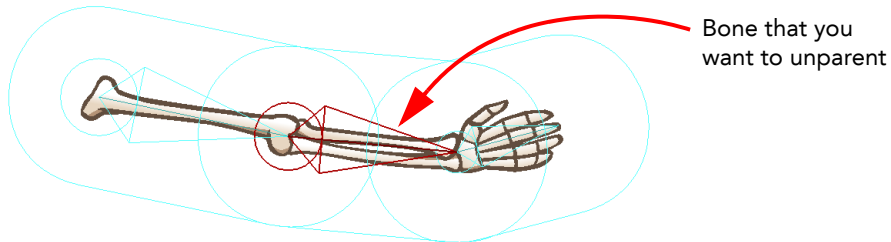


## Unparenting Bone Chains

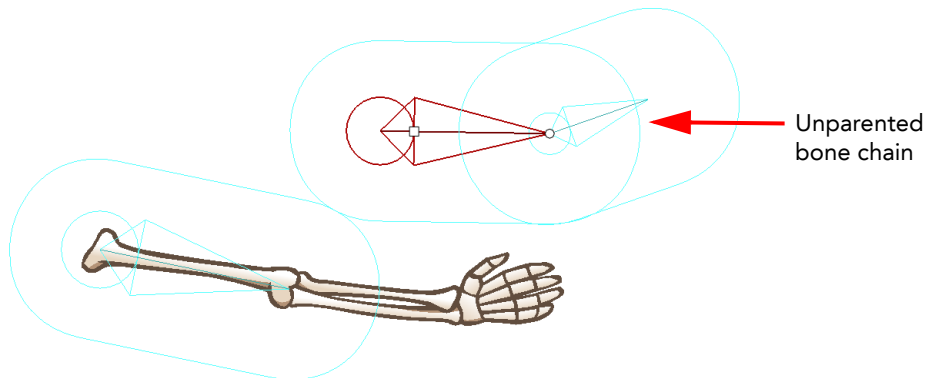
If for some reason you decide that you no longer want a bone or chain parented to another bone or chain, you can easily unparent.

**To unparent a bone or bone chain:**

1. From the Bone Tools toolbar, select the Bone Parent  tool.
2. In the Camera view, locate the bone you want to separate from another bone or bone chain. If you want to separate part of a chain from a larger chain, find the bone that would represent the head of the new chain.



3. With your mouse, click on the selected bone, then rapidly pull away from the parent bone or bone chain.



The selected bone and any of its children are now separated from its parent bone or bone chain.

## Animating the Skeleton


Once you have finished creating your character's skeleton, it is time to switch to the Bone Manipulator tool, reconnect the limbs to the body and animate it.

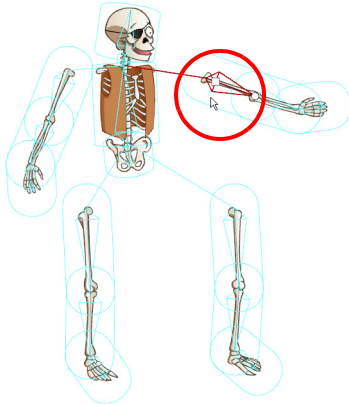
- Reassembling the Character, on page 278
- Ordering Limbs, on page 280
- Hiding Bones, on page 281
- Animating Bones, on page 282
- Disabling a Bone Animation, on page 286

### Reassembling the Character

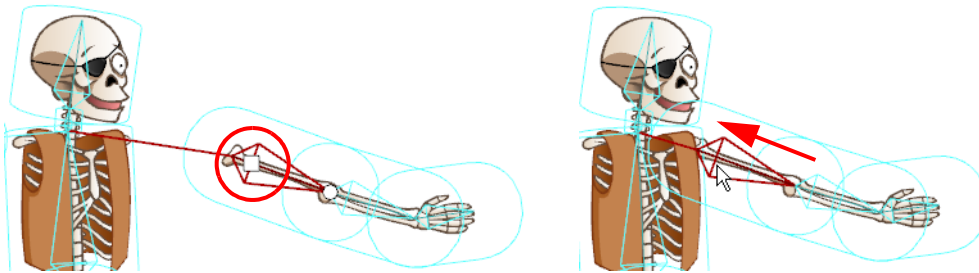
The first step is to reassemble the character so that the limbs do not appear spread apart, as in Setup mode.

**To reassemble the character:**

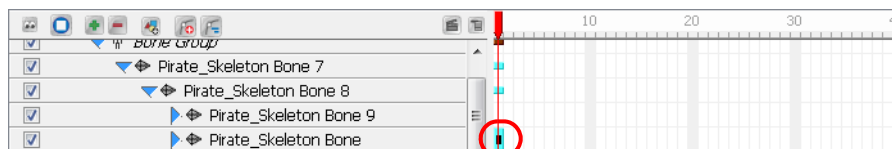
1. From the Bone Tools toolbar, select the Bone Manipulator  tool.  
You will notice the Camera view changing to animation mode display.
2. In the Timeline view, make sure that the red marker is at the first frame.
3. In the Camera view, select the main bone of one of the limbs.



4. Use the square handle to drag the bone chain to the desired position.

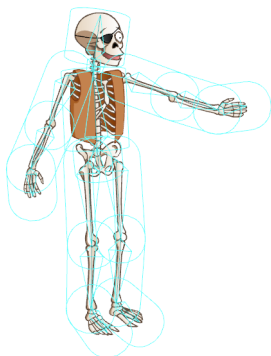


A keyframe will be added to the limb's bone layer on the first frame, locking its position in time.





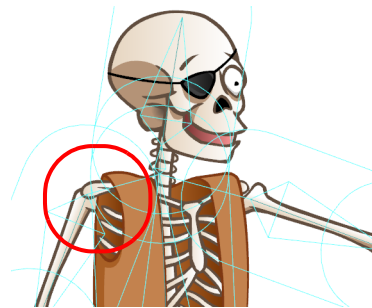
5. Repeat Step 3 and Step 4 for each of the limbs you need to assemble to the body.



*When your character is assembled and ready for animation, you should save it in the Library view for future reference, and easy reuse between projects. Refer to Chapter 6: Importing Artwork - Library, on page 160.*

## Ordering Limbs

When reassembling your character, you might find a limb that does not appear in the correct order, for example, this arm appears under the body.



The ordering method will differ, depending if your entire character is from a single drawing layer, or if your character's pieces are separated on several drawing layers:

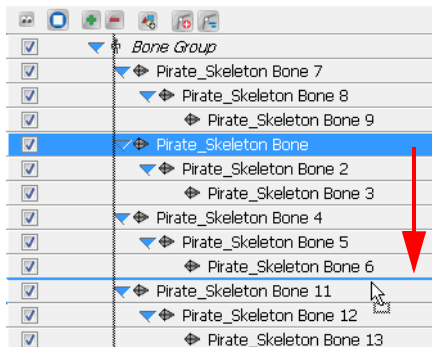
- Character on a Single Drawing Layer
- Character with Limbs on Different Drawing Layers

### Character on a Single Drawing Layer

When this occurs, it is because the ordering of the bones will determine the ordering of the drawing art that is included in its influence area.

**To reorder the bone elements:**

1. In the Timeline view, select the layer you need to reorder.
2. Drag the Bone element to the desired position within the Bone Group. Be careful to drop it in-between existing bone element hierarchies and not drop it on one, this would parent them.



*Note that the ordering of the Bone elements in the Timeline view is the opposite of the other elements. The higher the bone element is in the Timeline ordering, the further back it will appear in the Camera view.*

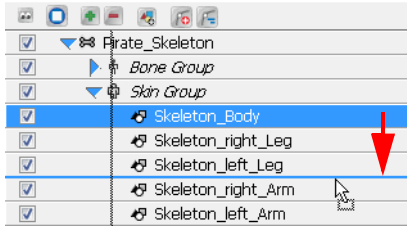
### Character with Limbs on Different Drawing Layers

When this occurs it is simply because the Drawing layer containing the limb in question is poorly ordered in the Timeline view. Simply reorder the Drawing layers from the Skin Group to fix the order.

**To reorder layers in the Timeline view:**

1. In the Timeline view, select the layer you need to reorder.

2. Drag the layer to the desired position within the Skin Group. Be careful to drop it in-between layers and not drop it on a layer, this would parent them.



Remember that the ordering of the Drawing elements in the Timeline view works as follows: The higher the drawing element is in the Timeline ordering, the closer to the front it will appear in the Camera view.



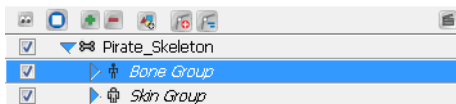
Refer to Chapter 14: Scene Setup - Ordering the Element Layers - Ordering Layer in the Timeline View, on page 349 to learn more about layer ordering.

## Hiding Bones

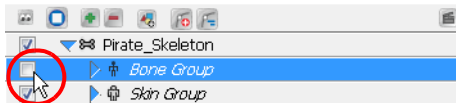
You might need to hide the bones from the Camera view. If this is the case, simply disable the Bone Group.

### To disable the Bone Group:

1. In the Timeline view, locate the Bone Group you need to hide.



2. Click in the layer's check box to disable it.




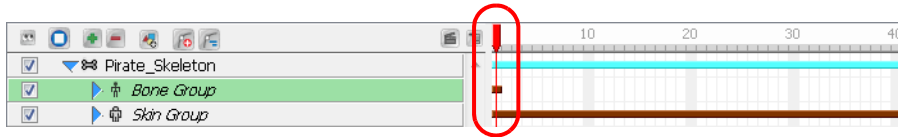
Note that disabling the Bone Group will only hide the bones and will not disable the Skeleton Animation. Refer to Disabling a Bone Animation, on page 286 to learn more.

## Animating Bones

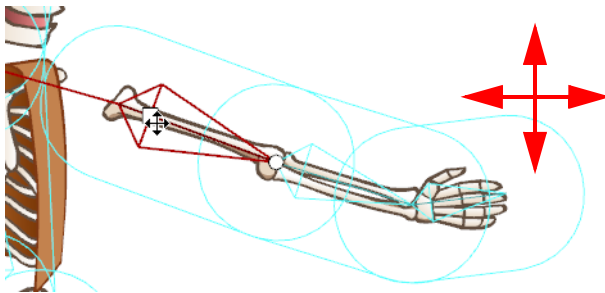
Now that the Skeleton puppet is ready, you can start animating it.

### To animate bones:

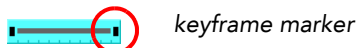
1. From the Bone Tools toolbar, select the Bone Manipulator  tool.
2. In the Timeline view, go to the frame where you want to set the first pose of your puppet.



3. In the Camera view, select the bone you want to animate.
4. When a bone is selected you can:
  - ▶ Use the square handle to drag the selected bone to a new position. Note that this handle is only available on the parent bone of a chain.

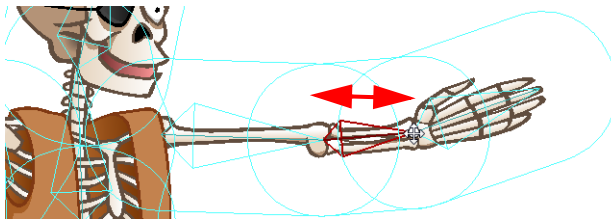


Repositioning a bone will create a square black keyframe marker in the Timeline view, on the layer of the selected bone.

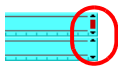



keyframe marker

- ▶ Use the circle handle to squash and stretch the bone. In the example below, notice how the parent bone is unaffected, but how the child bone becomes squashed and stretched in turn.

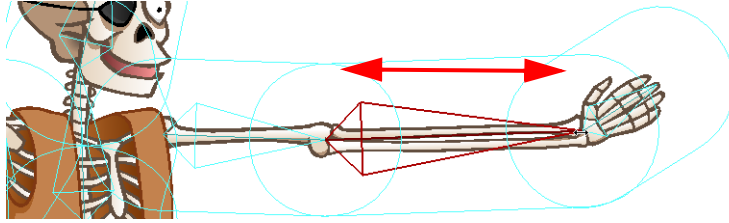


Scaling a bone with the Bone Manipulator tool will create up and down arrow-shaped keyframe markers in the Timeline view, on the layer of the selected bone, as well as on the layer of the child bone. The reason this manipulation produces the same types of keyframe markers that you would typically see for a scale and a rotation, is because the Bone Manipulator tool allows you to scale and rotate in the same movement.

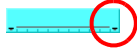


- ▶ You can also use the Scale  tool from the Animation tools toolbar to perform a different type of scaling. Grab the tip of the bone to squash and stretch it. In the example below, notice that the parent and child

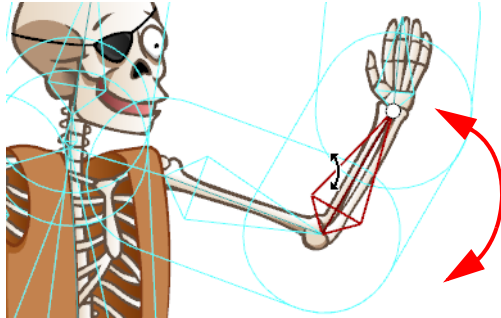
bones are unaffected by the scaling, but that the child's position changes relative to the scaling of the selected bone.



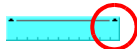
Scaling a bone with the Scale tool will create a down arrow keyframe marker in the Timeline view, on the layer of the selected bone.



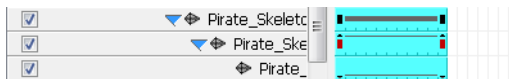
- ▶ Click directly on the bone and drag the cursor to rotate it.



Rotating a bone will create a tiny up arrow keyframe marker in the Timeline view, on the layer of the selected bone.



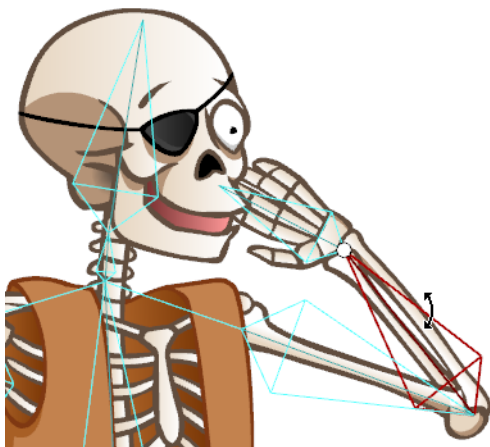
- ▶ If the Skeleton Effect is collapsed, note that you will not see the keyframe marker. If you expand the puppet's elements by clicking on the arrow next to the master peg element, you will notice a red square on the parent element of the bone you moved. This indicates that a child of this bone has a keyframe.



5. In the Timeline view, go to the frame where you want to set your second keyframe.



6. In the Camera view, animate your character.



7. Repeat this process until all your poses are done.



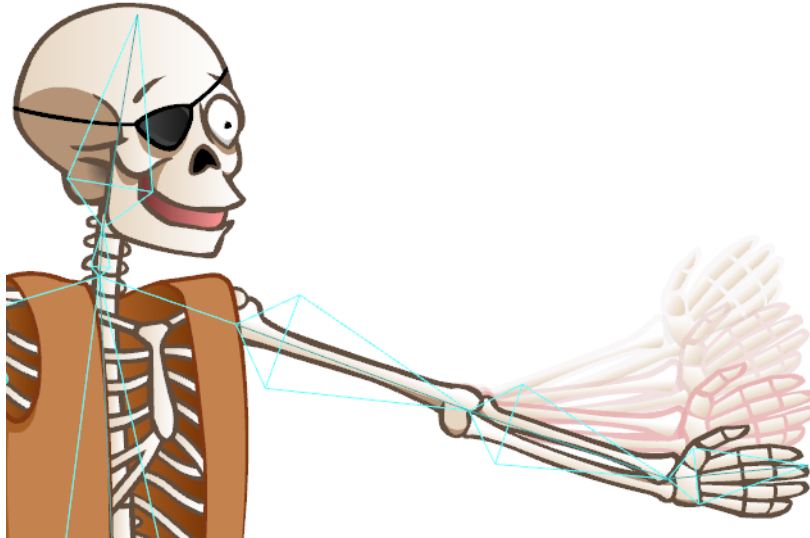
By default, Toon Boom Studio is set to create non-constant keyframes. This means that the software will automatically create the movement between two keyframes. This can prove to be very handy when animating your skeleton puppet. If in some situations you would rather create each keyframe in the interpolation of your movement, you can set your keyframe to be non-constant.



Refer to Chapter 11: Animating a Puppet - Creating a Simple Cut-out Animation - Constant and Non-Constant Segments, on page 298 to learn more!

## Onion Skin Toolbar

You can use the Onion Skin toolbar to help you create your animation. It will let you see the previous and next drawings of your animation as a handy reference while animating.



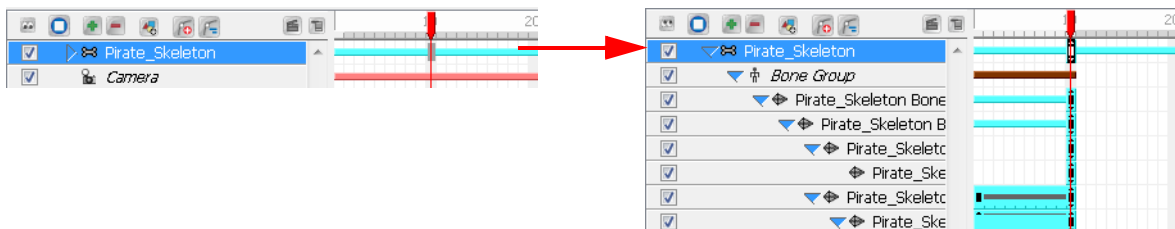
Refer to Chapter 11: Animating a Puppet - Creating a Simple Cut-out Animation - Using the Onion Skin in Cut-out Animation, on page 309

## Blocking the Body's Position

Once you position your puppet, you can create a keyframe for all the bone elements of your collapsed skeleton and block the complete body at a specific frame.

**To block the entire body position:**

1. In the Timeline view, select the frame at which you want to block your puppet's position.
2. Select **Element > Peg > Add Keyframe**. The default keyboard shortcut is [I].



## Deleting Keyframes

### To delete keyframes:

1. In the Timeline view, select the keyframe you want to remove.
2. Select **Element > Peg > Remove Keyframe**. The default keyboard shortcut is [Ctrl]+[R] (Windows) or [⌘]+[R] (Mac OS X).

The selected keyframe will be deleted.




If you select a keyframe on a collapsed layer, all the keyframes for all of that frame's collapsed elements will be removed.

## Removing All Keyframes

You can use the Remove All Keyframes option if you need to delete all the keyframes on one or many selected bone elements.

### To remove all keyframes:

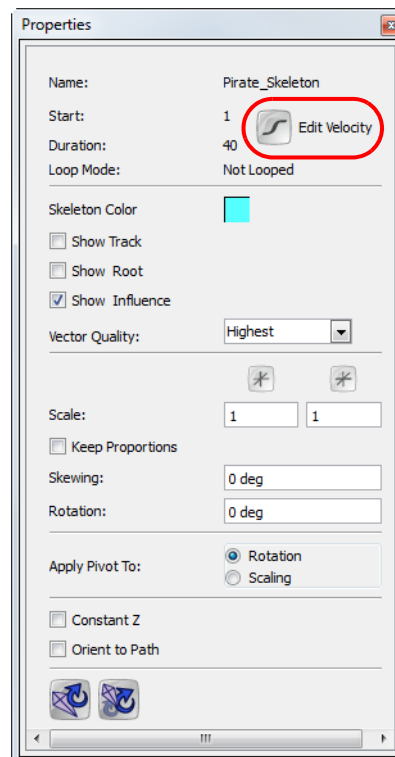
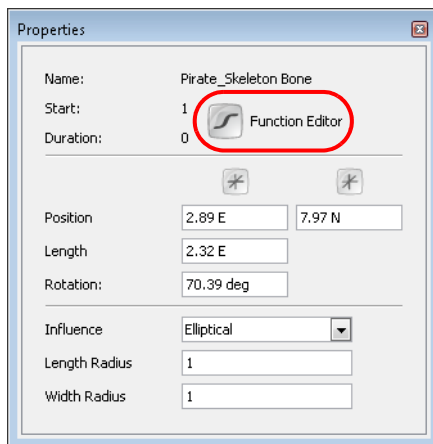
1. In the Timeline view, select the bone elements you wish to remove all the keyframes from. You can select many elements at once.
2. In the Timeline View  menu, select Remove All Keyframes. You can also right-click (Windows) or [Ctrl] + click (Mac OS® X) in the right side of the Timeline view, and select Remove All Keyframes from the pop-up menu.

## Adjusting the Velocity and Functions

You can adjust the velocity to create ease-in and ease out motions or edit the movement Functions using the Function Editor view. This greatly improves the quality and look of an animation, giving a more organic feel to the movement. You can edit the velocity and function of your skeleton or bones in the Function Editor view.

### To display the selected bone or skeleton in the Function Editor view:

1. In the Timeline view, select either your Skeleton Effect master element or the bone element you wish to edit the velocity of.
2. In the Properties view, click on the Function Edit or Edit Velocity button.



The Function Editor view will be displayed and the select bone or skeleton function will be selected.



To learn how to adjust the velocity and functions, refer to:

- Chapter 11: Animating a Puppet - Creating a Simple Cut-out Animation - Adjusting the Velocity, on page 306
- Chapter 14: Scene Setup - Function Editor View, on page 381

To learn more about the Skeleton Effect Properties view options, refer to:

- Skeleton Effect Properties, on page 287

To learn more about the Bone element Properties view options, refer to:

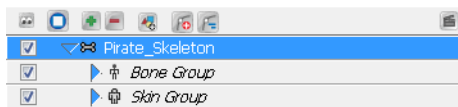
- Setting Up the Bones, on page 269
- Setting the Influence Area, on page 272

## Disabling a Bone Animation

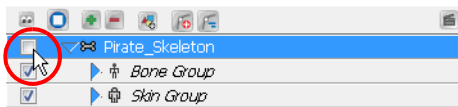
You might need to disable the Bone Animation. If this is the case, simply disable the Skeleton Effect.

### To disable the Skeleton Effect:

1. In the Timeline view, locate the Skeleton Effect top layer, it is the one with a bone icon.



2. Click in the layer's check box to disable it.



You will notice that the Camera view will automatically switch to Setup mode display.



## Skeleton Effect Properties

When the Skeleton Effect master element is selected, many options are made available to you in the Properties view. Because you can animate the master element of the Skeleton Effect just like the master Peg element of a puppet, many options refer to motion paths.

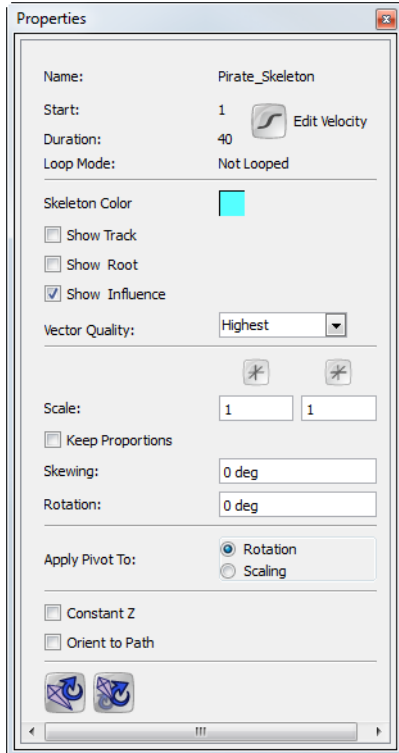


To learn more about animating trajectories and motion paths, refer to *Chapter 14: Scene Setup*, on page 347.






You can animate this element using the Sceneplanning tools available in the Sceneplanning Tools toolbar.



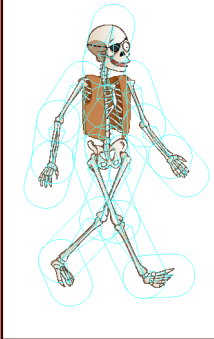
Refer to *Chapter 11: Animating a Puppet - Creating a Simple Cut-out Animation - Using the Different Sceneplanning Tools*, on page 302



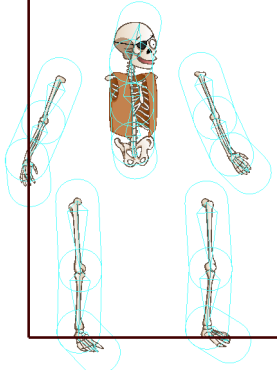
- **Name:** Displays the name of the selected Skeleton Effect element.
- **Start:** Displays the first frame number to which a keyframe is inserted on the Skeleton Effect element.
- **Duration:** Displays the duration of the animation of the Skeleton Effect element.
- **Loop Mode:** Displays if the layer is looped.  
Refer to *Chapter 14: Scene Setup - Other Options - Change Loops*, on page 391 to learn more about looping a peg movement.
- **Edit Velocity:** Click on this button to display the Skeleton Element in the Function Editor view. To learn how to adjust the velocity.  
Refer to:
  - ⇒ *Animating the Skeleton - Adjusting the Velocity and Functions*, on page 285
  - ⇒ *Chapter 11: Animating a Puppet - Creating a Simple Cut-out Animation - Adjusting the Velocity*, on page 306
- **Skeleton Colour:** Click in the colour square to open the Select Colour dialog box. Pick a colour to instantly change the colour of the selected Skeleton Effect elements. The colour will change in both the Timeline and Camera view. You can also change the default colour for each new Skeleton Effect you will add to your project using the Preferences panel. Refer to *Preferences*, on page 289 to learn how.

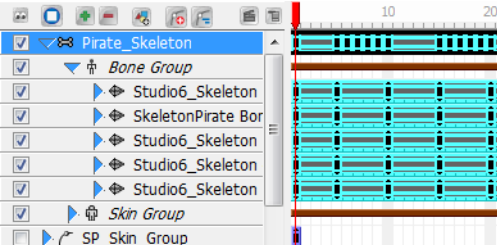
- **Show Track:** Enable this option to display the motion path of your animation in the Camera view. Refer to Chapter 14: Scene Setup - Creating a Motion Path - Motion Path, on page 370 to learn how to create a motion path.
- **Show Root:** Enable this option to display the root, which is the centre point of the bone structure. Before the master element of the Skeleton Effect is animated, the center point is situated in the centre of the Camera view.
- **Show Influence:** By default this option is enable, it lets you see the influence areas of the skeleton's bones in the Camera view. You can disable this option to hide the influence areas.
- **Vector Quality:** Choosing the vector quality level of your skeleton will either improve or depreciate the result of the bone distortion effect.
  - ⇒ Highest
  - ⇒ High
  - ⇒ Medium
  - ⇒ Low
- **Scale:** Type in the desired width and height scaling values: 1 = 100%. You can also use the Scale  tool from the Sceneplanning toolbar.
- **Keep Proportions:** Enable this option to keep proportions when scaling the skeleton.
- **Skewing:** Type in the desired skewing angle value. You can also use the Skew  tool from the Sceneplanning Tools toolbar.
- **Rotation:** Type in the desired rotation angle value. You can also use the Rotate  tool from the Sceneplanning Tools toolbar.
- **Apply Pivot to:** Select to which transformation you want to apply the pivot to.
  - ⇒ Rotation
  - ⇒ Scaling
- **Constant Z:** This option is disabled by default, which means that when you create a motion path along the Z-axis, the automatic interpolation calculates the X, Y and Z axis values. When it is enabled, the interpolation calculates the X and Y axis values and will keep the Z-axis value as constant. Refer to Chapter 14: Scene Setup - Creating a Motion Path - Motion Path - Constant Z, on page 378
- **Orient to Path:** Enable this option to force the element connected to the path to follow the motion path. Refer to Chapter 14: Scene Setup - Creating a Motion Path - Motion Path - Orient to Path, on page 377
-  **Copy Resting Position to Current Frame** - use this button to bring the skeleton and artwork back to the set-up position only on the currently selected frame. You can then reparent and setup the bones and their corresponding artwork in a new formation.
-  **Copy Resting Position to All Key Frames** - use this button to maintain all the position information in the keyframes that are part of an animated sequence, while restoring the puppet's bones to the set-up position and resetting all the transformation information back to zero.

Original keyframed position at frame 1



Set-up position at frame 1 after a Reset





Notice how the keyframes remain in the Timeline even after either of the Reset buttons have been used. This is because they still contain position information. This means that the Pirate Skeleton still moves across the Camera view, even while in the Set-up position.

## Preferences

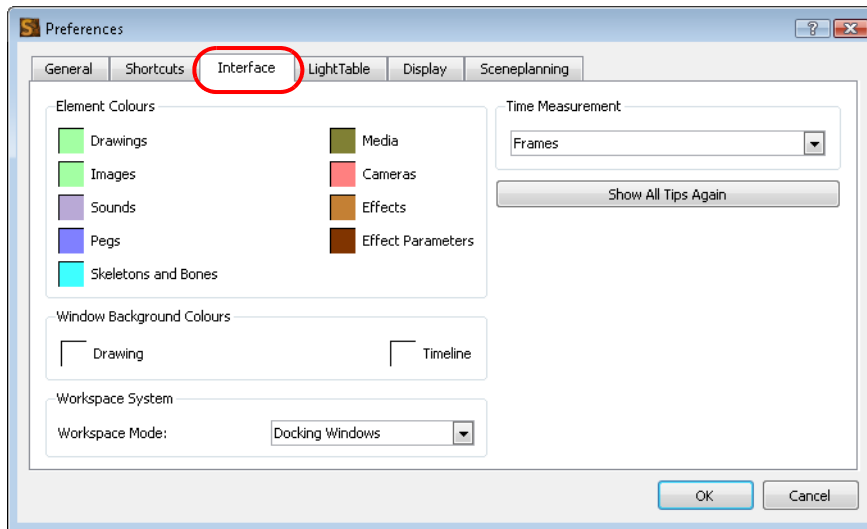
When working with the bones feature, you can set the colour preference of the bone display from the Preferences panel.

**To open the Preferences panel:**

- ▶ Windows: Select **Edit > Preferences**.
- ▶ Mac OS X: Select **Toon Boom Studio 7.1.0 > Preferences**.

**To change the bones colour display:**

1. In the Preferences panel, click on the Interface tab.



2. In the Element Colours section, double click on the Skeletons and Bones colour square to display the **Select Colour** dialog box.



3. Pick a colour in the **Select Colour** dialog box and click on the Ok button.
4. In the Preferences Panel, click on the OK button.
5. Every new Skeleton Effect that you create will use this colour as its default display in the Timeline and Camera view.



You can also change the colour of an already created Skeleton Effect by using its Properties view. Refer to *Skeleton Effect Properties*, on page 287 to learn how.

## What's Next?

So far, you have learned about:

- About the Skeleton Effect
- Choosing Your Character
- Building the Skeleton
- Animating the Skeleton
- Skeleton Effect Properties
- Preferences

Next, you will learn how to animate a cut-out puppet.

# Chapter 11 Animating a Puppet



Start animating your characters with Toon Boom Studio's easy to use tools.

In this chapter, you will learn about the following:

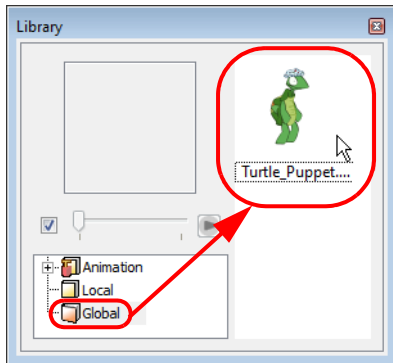
- Getting the Character From the Library, on page 292
- Understanding Keyframes and Drawings, on page 294
- Creating a Simple Cut-out Animation, on page 295
- Preferences, on page 311

## Getting the Character From the Library

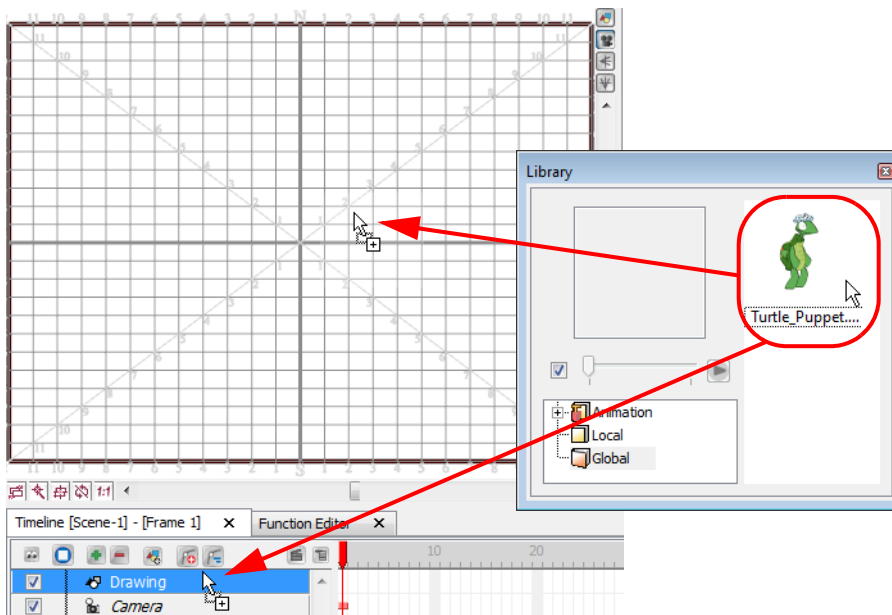
To use a character that was previously created and stored in the Library, you need to import it into your scene.

**To import your character from the library:**

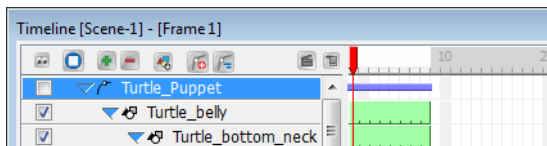
1. Create your new Studio project .
2. In the Library view, select the template of the character you want to animate.




3. Drag the selected template to the Camera or Timeline view's left side.



The puppet will appear in the Timeline view.

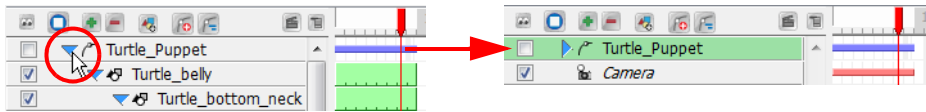


 Refer to the Library section in the Animating a Puppet chapter to learn more about the Library view.

## Extending the Exposure

To extend the puppet exposure:

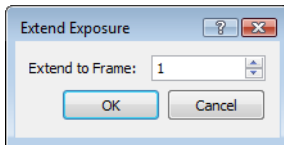
1. In the Timeline view, click on the arrow beside the top layer of your puppet to collapse it.



In the Timeline view, select your puppet main layer and

select **Element > Cell > Extend Exposure** or use the keyboard shortcut [Ctrl]+[Shift]+1 (Windows) or [⌘]+[Shift]+1 (Mac OS X).

The **Extend Exposure** dialog box opens.



2. In the Extend to Frame field, enter the planned final frame of your animation and click on the OK button. This will extend the exposure of every element contained in your puppet.



Refer to the Traditional Digital Animation chapter to learn more about exposure and timing.

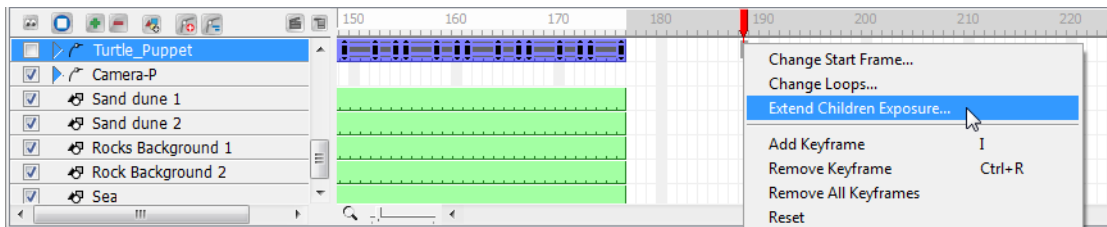
## Extending the Children's Exposure

To extend the exposure of a puppet's children:

1. In the Timeline view, in the puppet layer's row, select the frame where you would like to extend the exposure to.



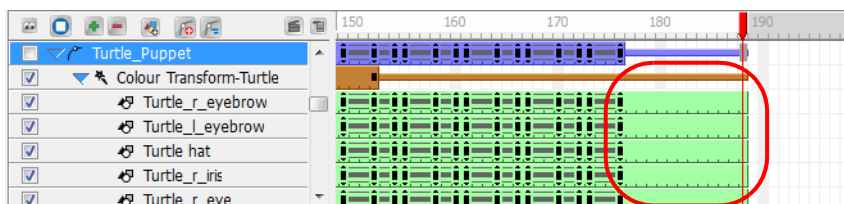
2. Right-click on the frame and from the pop-up menu, select **Extend Children Exposure**.



The children's exposure is indicated by a thin bar.



When you uncollapse the Puppet Peg layer, the children's extended exposures are revealed.



## Understanding Keyframes and Drawings

Before starting to animate it is important to understand the difference between drawings and keyframes.

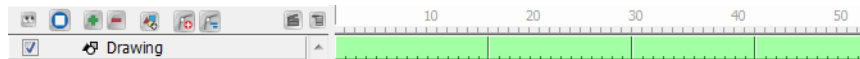
Keyframes lock a change in position, rotation or scale to a specific frame and store the value for that transformation. When you add a keyframe to define the values for one or more transformations, such as motion, scale, skew or rotation, you can use the features in Toon Boom Studio to animate the changes between them.

Just as creating a drawing element and selecting a new position over 20 frames is faster than creating 20 drawings for 20 frames, adding keyframes for a peg's transformations and letting Toon Boom Studio animate the rest saves even more time.

### Keyframes and Drawing Blocks

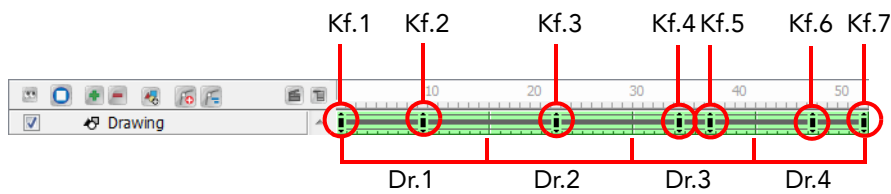
In the Timeline view, if you extend the exposure of a drawing, it will be represented as a green block. A new green block is displayed for every new drawing you create.

These are called Drawing Blocks.



To change the position of a drawing over time, you do not need to create a second drawing block, you simply need to add a position keyframe.

The position keyframes record the position of your drawing on a particular frame. They appear as black squares in the Timeline view. Notice that the keyframes are positioned on frames independent of the beginning and end of each Drawing Block.





## Creating a Simple Cut-out Animation

In this section, you will learn about different tools and features available in Toon Boom Studio to help you animate your cut-out puppet.


This topic is divided as follow:

- Animating the Parts, on page 295
- Constant and Non-Constant Segments, on page 298
- Navigating Inside a Hierarchy, on page 299
- Using the Different Sceneplanning Tools, on page 302
- Adjusting the Velocity, on page 306
- Using the Onion Skin in Cut-out Animation, on page 309
- Swapping Images, on page 310

### Animating the Parts

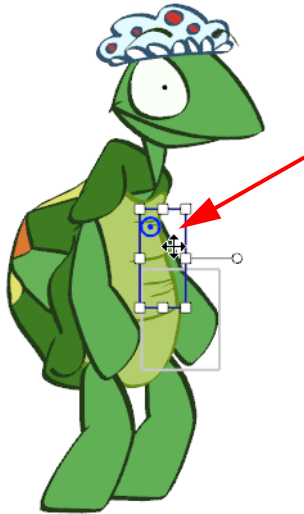
Once you import your cut-out puppet into your Studio project, you can start animating it.

**To animate a puppet:**

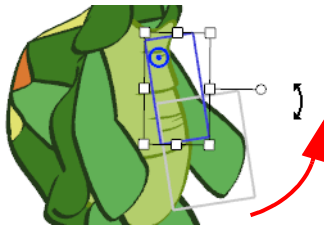
1. In the Sceneplanning Tools toolbar, select the Transform  tool. You can also select **Tools > Sceneplanning Tools > Transform**. The default keyboard shortcut is [7].
2. In the Timeline view, go to the frame where you want to set the first pose of your puppet.



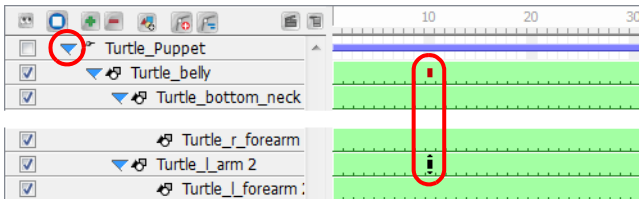
3. In the Camera or Timeline view, select the parts to animate.
  - ▶ If your puppet is collapsed, click on the top layer arrow to expand it.



4. Using the Transform tool, rotate, skew, scale or translate the selection to its new position.



A keyframe is created in the Timeline view. If your puppet is collapsed, note that you will not see the keyframe on the master peg layer.

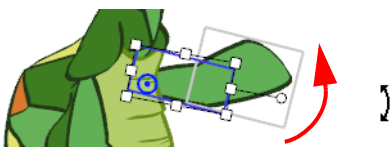


- ▶ If you expand the elements of your puppet by clicking on the arrow next to the master peg element, you will notice a red square on the parent element of the element you moved, this is an indication that a child of this element has a keyframe.
- ▶ A black square on the element you moved represents the keyframe.

5. In the Timeline view, go to the frame where you want to set your second keyframe.



6. In the Camera view, animate your character.



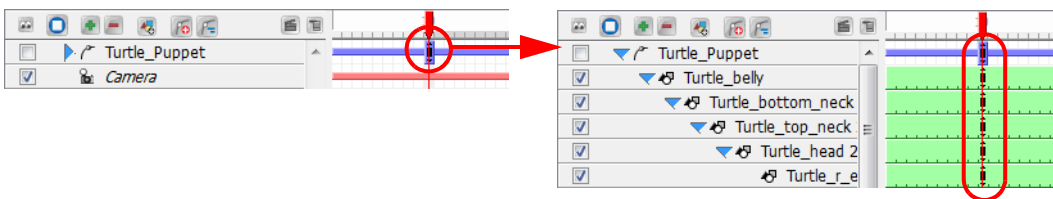
7. Repeat this process until all your poses are done.

### Blocking the Body's Position

Once you position your puppet, you can create a keyframe for all the elements of your collapsed puppet and block the complete body at a specific frame.

**To block the entire body position:**

1. In the Timeline view, select the frame at which you want to block your puppet's position.
2. Select **Element > Peg > Add Keyframe**. The default keyboard shortcut is [I].



### Deleting Keyframes

**To delete keyframes:**

1. In the Timeline view, select the keyframe you want to remove.
2. Select **Element > Peg > Remove Keyframe**. The default keyboard shortcut is [Ctrl]+[R] (Windows) or [⌘]+[R] (Mac OS X).

The selected keyframe will be deleted.



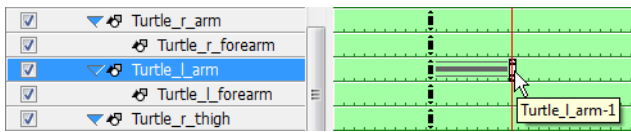
If you select a keyframe on a collapsed layer, all the keyframes for all of that frame's collapsed elements will be removed.

## Copying and Pasting Keyframes

If you want to copy the value of a keyframe without copying the entire drawing contained in the selected cell, you will need to use the Paste Special command.

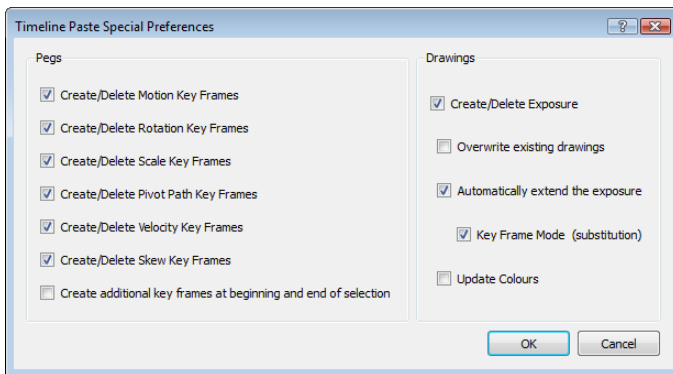
**To copy and paste keyframes:**

1. In the Timeline view, select the keyframe you want to copy the position values from.

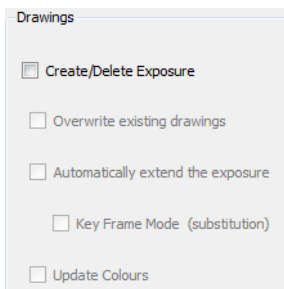


2. Select **Edit > Copy Cell**. The default keyboard shortcut is [Ctrl]+[C] (Windows) or [⌘]+[C] (Mac OS X).
3. In the Timeline view, select the cell in which you want to paste the copied position values.
4. Select **Edit > Paste Special**. The default keyboard shortcut is [Ctrl]+[B] (Windows) or [⌘]+[B] (Mac OS X).

The **Timeline Paste Special Preferences** dialog box opens.



5. In the Pegs section, enable or disable the following options to choose which values of the keyframe you want to paste:
  - **Create/Delete Motion Key Frames**  
Enable this option to paste the translation value of the copied keyframe.
  - **Create/Delete Rotation Key Frames**  
Enable this option to paste the rotation value of the copied keyframe.
  - **Create/Delete Scale Key Frames**  
Enable this option to paste the scale value of the copied keyframe.
  - **Create/Delete Pivot Key Frames**  
Enable this option to paste the pivot position value of the copied keyframe.
  - **Create/Delete Velocity Key Frames**  
Enable this option to paste the velocity value of the copied keyframe.
  - **Create/Delete Skew Key Frames**  
Enable this option to paste the skew value of the copied keyframe.
  - **Create additional key frames at beginning and end of selection**  
This option will create an additional keyframe at the beginning and at the end of your pasted selection to block the copied values between them.
6. In the Drawings section, disable the Create/Delete Exposure option, this will grey out the rest of the Drawings options. If this option is enabled, the drawing exposure will be copied at the same time as the position value.



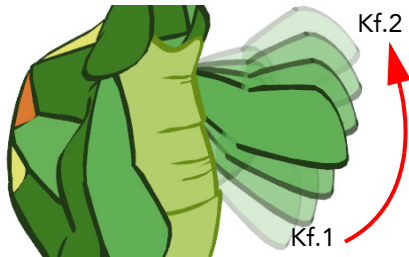
## Constant and Non-Constant Segments

By default, when you add keyframes, non-constant segments are created between them. You can change this option to create constant segments.

- Refer to the Preferences topic to learn how you can change the default behaviour of Studio so it creates constant segments by default.

### Non-Constant Segment

A non-constant segment means that Studio will automatically create the interpolation between the 2 keyframes, creating a motion.



A non-constant segment is represented as grey lines going from one keyframe to the other.



**To switch from a constant to a non-constant segment:**

- In the Timeline view, select the first keyframe of the constant segment you wish to turn to non-constant.



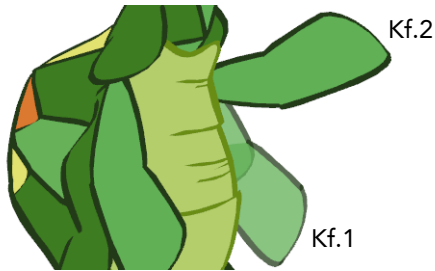
- From the top menu, select **Element > Peg > Set Non-Constant Segment**. The keyboard shortcut is [Ctrl]+[Shift]+[L] (Windows) or [⌘]+[Shift]+[L] (Mac OS X).

The segment will turn to a non-constant segment.



## Constant Segment

A constant segment means that the drawing will automatically jump from one position to the other without creating any motion in between.



A constant segment is represented as a blank gap between the two keyframes.



To switch from a non-constant to a constant segment:

1. In the Timeline view, select the first keyframe of the non-constant segment you wish to turn to constant.



2. From the top menu, select **Element > Peg > Set Constant Segment**. The keyboard shortcut is [Ctrl]+[L] (Windows) or [⌘]+[L] (Mac OS X).

The segment will turn to a constant segment.



## Navigating Inside a Hierarchy


If you create a layer hierarchy when you build your puppet you can use the hierarchy navigation commands to travel up and down the parent-children chain, and to move between the children. This is useful if you want to select small parts that are difficult to reach. You can also select different parts from the Timeline or Camera view.

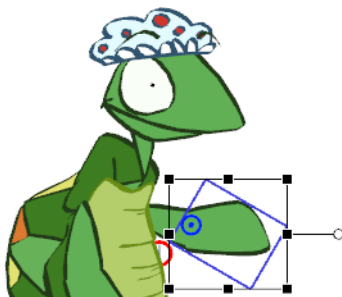
### Selecting a Parent or Child Element

In a hierarchy, elements connected to one another are called parent and child.



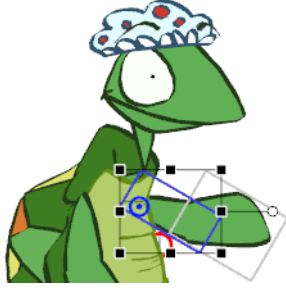
To select the parent or child element:

1. In the Sceneplanning Tools toolbar, select the Transform  tool. You can also select **Tools > Sceneplanning Tools > Transform**. The default keyboard shortcut is [7].
2. In the Camera or Timeline view, select an element that is attached to a hierarchy.

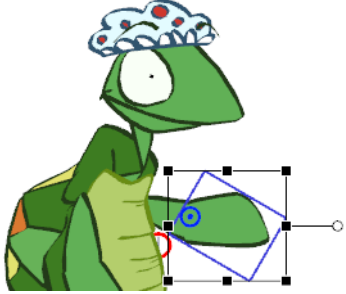


3. Select **Element > Arrange > Select Parent**.


The selection will change to the parent of the selected element.



4. Once a parent peg is selected, you can select **Element > Arrange > Select Child**, to select its child.



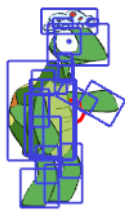
To select all children of an element:

1. In the Sceneplanning Tools toolbar, select the Transform  tool. You can also select **Tools > Sceneplanning Tools > Transform**. The default keyboard shortcut is [7].
2. In the Camera or Timeline view, select an element which is part of a hierarchy and is a parent of other elements.



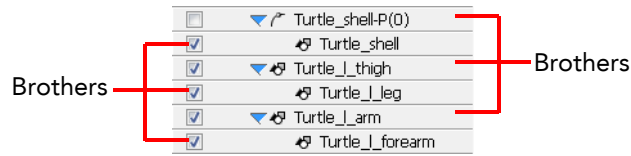
3. Select **Element > Arrange > Select Children**.

The selection will change to select all the elements that are attached to the selected parent element.




## Selecting Brother Elements

Elements that are on the same hierarchy level are called brothers.



To select previous and next brother:

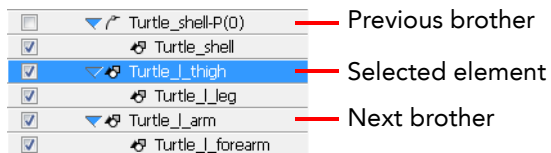
1. In the Sceneplanning Tools toolbar, select the Transform  tool. You can also select **Tools > Sceneplanning Tools > Transform**. The default keyboard shortcut is [7].
2. In the Camera or Timeline view, select an element that is part of a hierarchy.



3. Select **Element > Arrange > Select Previous Brother** or **Select Next Brother**.













This selects either the previous or next brother of the selected element. **Previous brother** is the one situated a level higher, while the **next brother** is the one situated a level lower in the Timeline view order.



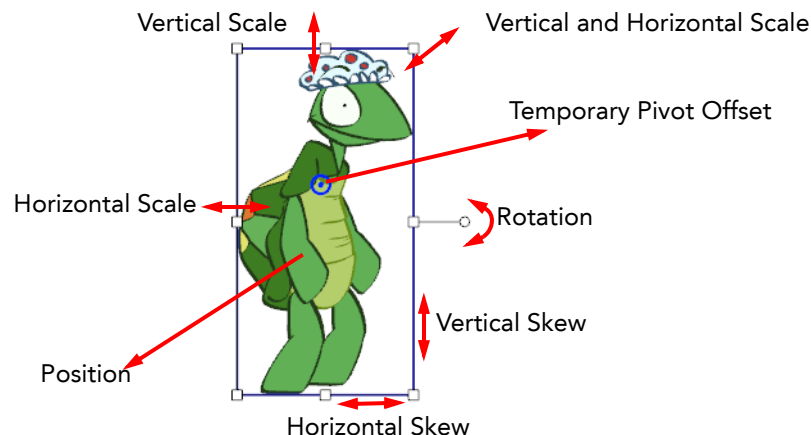
## Using the Different Sceneplanning Tools

The animation tool you use determines the kind of keyframe you create. In the Timeline view, each of these keyframe types are displayed differently.


-  **Transform tool**  
Creates a keyframe for motion, scale, rotation and skew values at once.  

-  **Motion tool**  
Creates a keyframe for the position values only.  

-  **Rotate tool**  
Creates a keyframe for the angle values only.  

-  **Skew tool**  
Creates a keyframe for the skew values only.  

-  **Scale tool**  
Creates a keyframe for the horizontal and vertical scale values only.  


## Using the Transform Tool

Use the Transform tool to create a keyframes for position, scale, rotation and skew values simultaneously.



**To use the Transform tool:**


- In the Sceneplanning Tools toolbar, select the Transform  tool. You can also select **Tools > Sceneplanning Tools > Transform**. The default keyboard shortcut is [7].
- In the Camera or Timeline view, select the element you wish to transform.
- Use one of the bounding box handles to transform your element.
  - ▶ Hold down the [Shift] key as you scale to keep the ratio when using the corner handles.
  - ▶ Holding down the [Shift] key as you rotate, locks the rotation every 15 degrees.

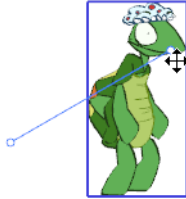


## Using the Motion Tool

Use the Motion tool to create a keyframe for the position value.

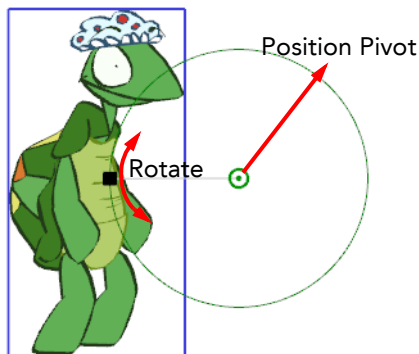
To use the Motion tool:

1. In the Sceneplanning Tools toolbar, select the Motion  tool. You can also select **Tools > Sceneplanning Tools > Motion**. The default keyboard shortcut is [O].
2. In the Camera or Timeline view, select the element you wish to reposition and drag it to the new position.
  - ▶ Hold down the [Shift] key as you reposition your element to temporarily display a guide showing you the starting position and the path of the motion you are creating.




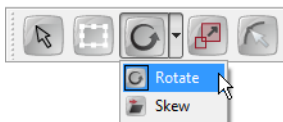
## Using the Rotate Tool

Use the Rotate tool to create a keyframe for the rotation angle value.



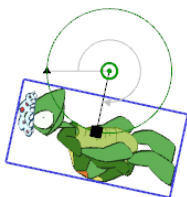
To use the Rotate tool:

1. In the Sceneplanning Tools toolbar, select the Rotate  tool. You can also select **Tools > Sceneplanning Tools > Rotate**.



2. In the Camera or Timeline view, select the element you wish to rotate.
3. Use the rotation handle to rotate your element.

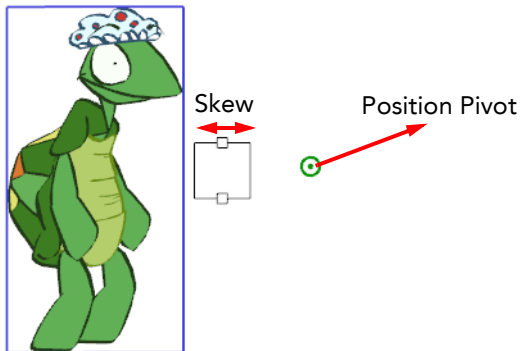
As you rotate your element an angle guide will appear, displaying the rotation angle you are creating.




- ▶ Holding down the [Shift] key as you rotate, locks the rotation every 15 degrees.

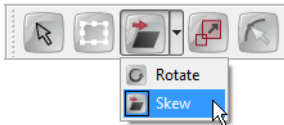
## Using the Skew Tool

Use the Skew tool to create a keyframe for the skew value.

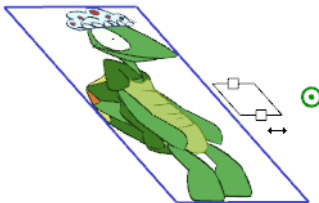


To use the Skew tool:

1. In the Sceneplanning Tools toolbar, select the Skew  tool. You can also select **Tools > Sceneplanning Tools > Skew**.

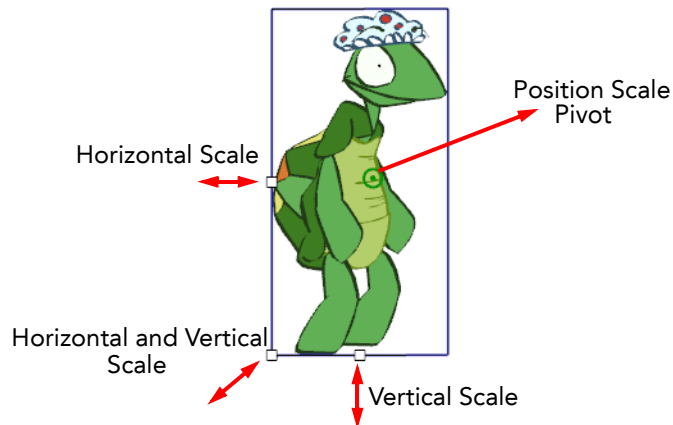


2. In the Camera or Timeline view, select the element you wish to skew.
3. Use the handles to skew your element.




## Using the Scale Tool

Use the Scale tool to create a keyframe for the scaling value.

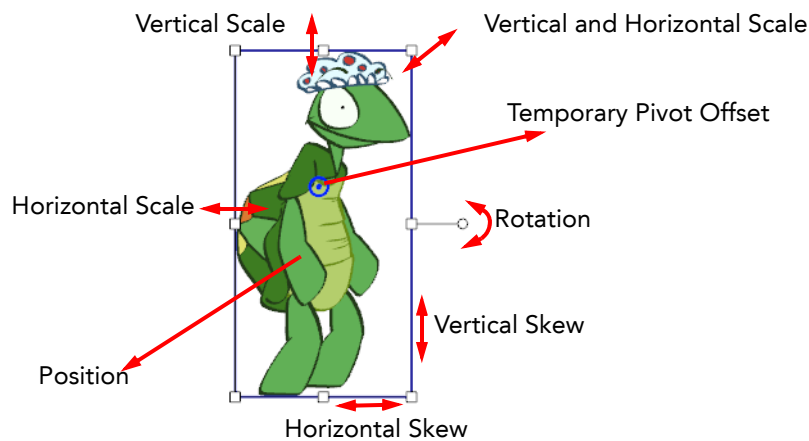


**To use the Scale tool:**


1. In the Sceneplanning Tools toolbar, select the Scale  tool. You can also select **Tools > Sceneplanning Tools > Scale**. The default keyboard shortcut is [9].
2. In the Camera or Timeline view, select the element you wish to resize.
3. Use the handles to resize your element.
  - ▶ Hold down the [Shift] key as you scale to keep the ratio when using the corner handles.

## Using the Select Tool

Use the Select tool to position, scale, rotate and skew your elements without creating a keyframe.

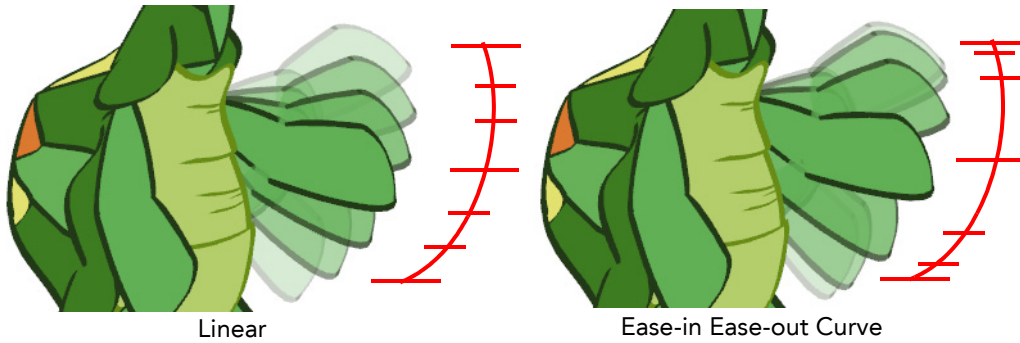


**To use the Select tool:**

1. In the Sceneplanning Tools toolbar, select the Select  tool. You can also select **Tools > Sceneplanning Tools > Select**. The default keyboard shortcut is [6].
2. In the Camera or Timeline view, select the element you wish to transform without creating a keyframe.
3. Use one of the bounding box handles to transform your element.
  - ▶ Hold down the [Shift] key as you scale to keep the ratio when using the corner handles.
  - ▶ Holding down the [Shift] key as you rotate, locks the rotation every 15 degrees.

## Adjusting the Velocity

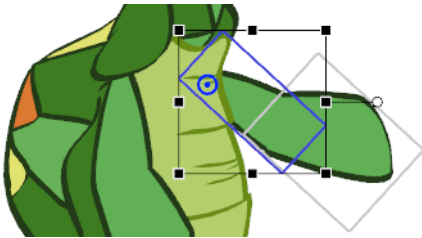
The velocity, or ease-in ease-out, is used on non-constant segments to create a more natural movement.



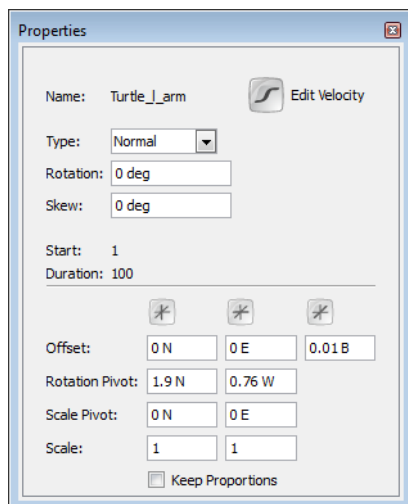
Ease-in and ease-out is the acceleration and deceleration of the movement. The speed of the motion is adjusted between two keyframes so that the movement will start slowly, speed up and then slow down again as it reaches the second keyframe. Adjusting the velocity will create a more natural feel to the movement.


**To adjust the velocity of a movement:**

1. In the Sceneplanning Tools toolbar, select one of the sceneplanning tools. You can also select **Tools > Sceneplanning Tools >** the desired tool, or use the desired tool keyboard shortcut.
1. In the Camera or Timeline view, select the animated element of which you want to adjust the velocity.

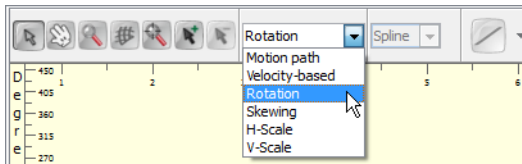


The selected element properties will appear in the Properties view.

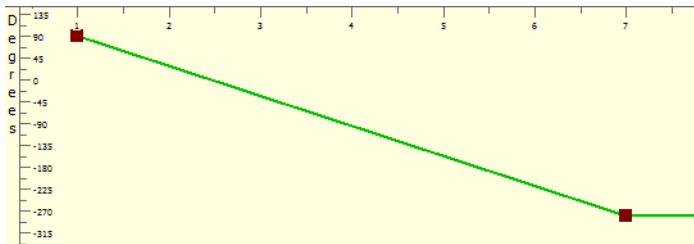


2. In the Properties view, click on the Edit Velocity  button.  
The Function Editor view opens.

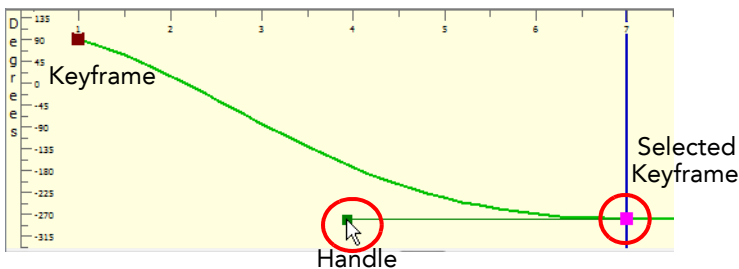
- In the drop-down menu, select the movement for which you want to adjust the velocity.



The curve corresponding to the selected movement will be displayed.



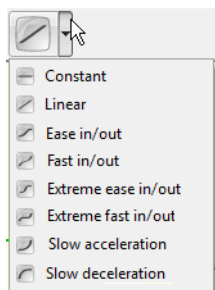
- Adjust your curve:
  - Click on a keyframe to select it.
  - Drag the handle to adjust the curve.



- Repeat Step 3 and Step 4 for each keyframe.

You can also use the default curve options to quickly adjust your velocity.

- Click on the Curve icon to open the drop-down menu and select the desired velocity option.



⇒ **Constant**

This option will change a non-constant segment to a constant segment. Removing the automatic motion tweening created by Studio.

⇒ **Linear**

This option will create a straight line of constant speed for a more automated animation look.

⇒ **Ease in/out**

This option will create an acceleration effect at the beginning of the curve, speeding up middle and slowing down at the end of the curve. This creates a more natural animation look.

⇒ **Fast in/out**


This option will create a curve that starts quickly, slows down in the middle and ends with a final acceleration.

⇒ **Extreme ease in/out**

This option will create a more dramatic ease in, ease out effect.

⇒  **Extreme fast in/out**

This option will create a more dramatic fast in, fast out effect.

⇒  **Slow acceleration**

This option will create a curve that starts slowly to smoothly accelerate over time.

⇒  **Slow deceleration**

This option will create a curve that starts quickly to smoothly decelerate over time.



*Refer to the [Discovering the Interface](#) chapter to learn more about customizing your workspace and adding views.*

*Refer to the [Scene Setup](#) chapter to learn more about the Function Editor view.*


## Using the Onion Skin in Cut-out Animation

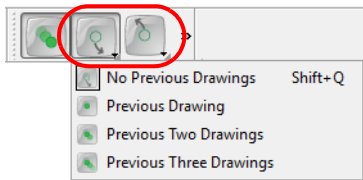










You can use the Onion Skin option to display the 3 previous and the 3 next drawings of your character as you animate your puppet. Being able to refer to these poses helps you accurately determine the size, angle or position of the drawing you are working on.


By default the onion skin is displayed as the element's shape in washed-out colours. Green represents the previous frames and red represents the next frames.

**To enable the Onion Skin option:**

1. In the Onion Skin toolbar, enable the Onion Skin  option. You can also select **View > Onion Skin > Turn On Onion Skin**.
2. Select the range of previous and next frames to be displayed in the Onion Skin. Click and hold the Previous and the Next onion skin buttons to open each drop-down menu and select the desired option. You can also select **View > Onion Skin >** and one of the following choices:



- ▶  **No Previous Drawing**  
This option does not display the content of the previous frames.
- ▶  **Previous Drawing**  
This option displays the content of the previous frame.
- ▶  **Previous Two Drawings**  
This option displays the content of the two previous frames.
- ▶  **Previous Three Drawings**  
This option displays the content of the three previous frames.
- ▶  **No Next Drawing**  
This option does not display the content of the previous frames.
- ▶  **Next Drawing**  
This option displays the content of the next frame.
- ▶  **Next Two Drawings**  
This option displays the content of the two previous frames.
- ▶  **Next Three Drawings**  
This option displays the content of the three previous frames.

 Refer to *Chapter 8: Traditional Digital Animation - Preferences*, on page 230 topic to know how to customize the display options of the Onion Skin.

## Swapping Images

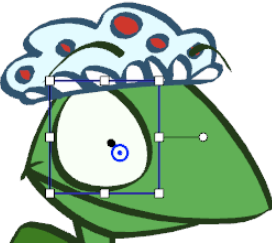


If your puppet contains extra drawings, such as extra heads, mouths, eyes or hands, you can use the image swapping trick to animate your puppet.

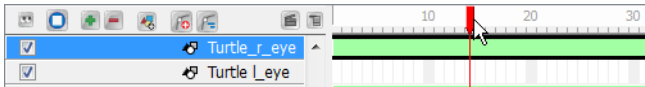
For example, if your puppet contains extra drawings of eyes, such as an open eye, a half-closed eye and a closed eye, you can easily animate a blink.

**To create a blinking eye with image swapping:**

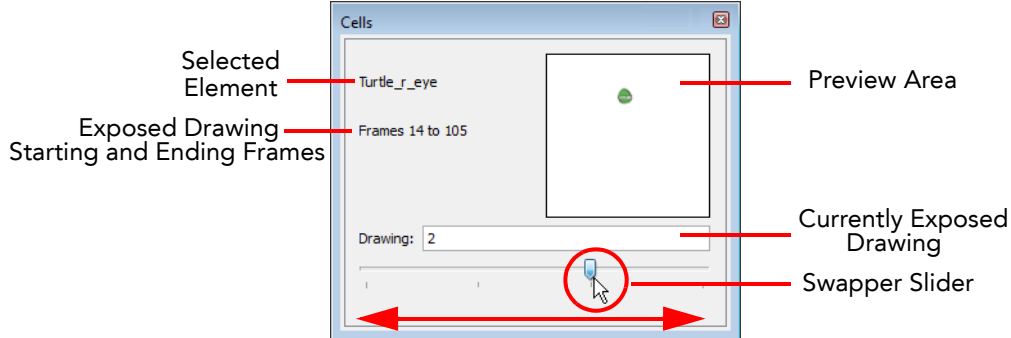
1. Select sceneplanning tool from the Sceneplanning toolbar. You can also select **Tools > Sceneplanning Tools > the desired tool.**
2. In the Camera or Timeline view, select the eye.



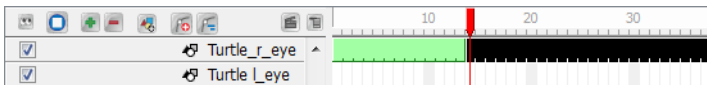
3. In the Timeline view, select the frame at which you want the puppet to start closing its eye.



4. In the Cells view, use the swapper slider to select the half-closed eye drawing.



The selected drawing will be displayed in the preview area, and the exposure will automatically be updated in the Timeline view.



5. In the Timeline view, select two frames later.



6. In the Cells view, use the swapper slider to select the closed eye drawing.
7. To change back to the open eye, repeat Step 5 and Step 6.





## Preferences

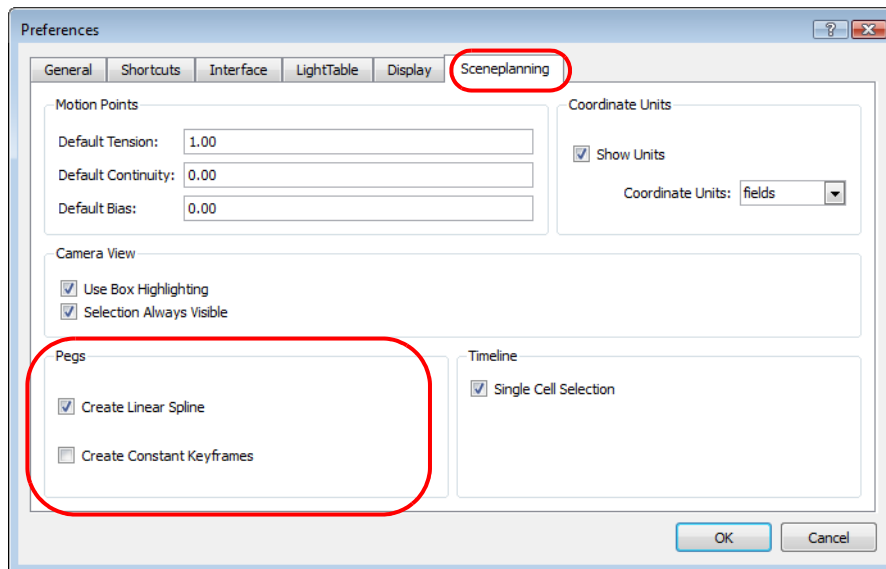
In Toon Boom Studio, you can set your own preferences to fit your cut-out animation work style.

To open the Preferences panel:

- ▶ **Windows:** Select **Edit > Preferences**.
- ▶ **Mac OS X:** Select **Toon Boom Studio 7.1 > Preferences**.

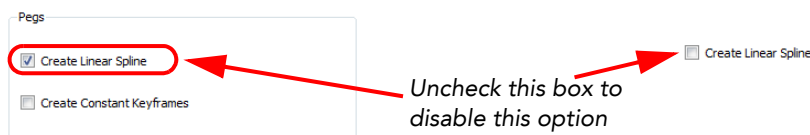
### Sceneplanning Tab Preferences

Select the Sceneplanning tab to customize the preferences relative to cut-out animation.



### Create Linear Spline

By default, the Create Linear Spline option is enabled. This means that when you animate an element with a motion, rotation or scaling, the velocity will be set to Linear. This means that the motion tweening executed by Toon Boom Studio will be straight with no variation in the speed.



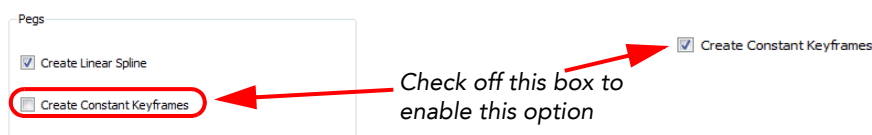
You can disable this option, by unchecking the box, so that every time you create a motion, rotation or scaling, the velocity will be set to the default ease-in, ease-out curve.



Refer to the *Adjusting the Velocity* topic to learn more about velocity and ease-in, ease-out concept.

### Create Constant Keyframes

By default, the Create Constant Keyframes is disabled. This means that every time you create a motion, a non-constant segment is created between every two keyframes and the motion tweening is automatically calculated by Studio.



You can enable the Create Constant Keyframes, by checking-off the box, so that every time you create a motion, the segments in between the keyframes will automatically be constant segment. No motion tweening is calculated and the position jumps from one to another at each keyframes.

## What's Next?

So far you have learned about:

- Using a character that was previously created and stored in the Library
- The difference between drawings and keyframes
- The different tools and features available to help you animate your cut-out puppet
- Setting your own preferences to fit your cut-out animation work style

It is now time to learn how you can import soundtracks and dialogue into your animation to make it more engaging and entertaining.

# Chapter 12 Sound and Lip-sync



With Toon Boom Studio, you can import soundtracks and dialogue into your animation to make it more engaging and entertaining. Studio has many sound editing features to help you work with your soundtracks and dialogue.

Studio can automatically analyze voice tracks to determine which of the eight animation phonemes (mouth shapes) would best apply to each frame of the sound. You can then easily draw mouth shapes for your character following the useful mouth chart that the software automatically generates. Furthermore, Toon Boom Studio can also automatically apply drawings of mouth shapes to each frame of your animation based on the mouth chart.

In this chapter, you will learn about the following:

- Importing a Sound File, on page 314
- Sound Display, on page 315
- Sound Playback, on page 317
- Sound Scrubbing in the Timeline View, on page 317
- Editing a Sound File, on page 318
- Adding an Empty Sound Layer, on page 328
- Lip-sync, on page 329
- What's Next?, on page 333

## Importing a Sound File

When you decide that you want to add sound to your movie, you must prepare this sound outside of Toon Boom Studio. Then, in Toon Boom Studio, you add a Sound element to organize sound files in your animation.

A sound will play in the movie until it reaches the end of the file or a stop frame, created in the Sound Element Editor. If the sound extends into multiple scenes it will continue to play.

You can import as many sound files as you like. However, 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 imports, exports and plays sounds using QuickTime. Toon Boom Studio only supports the sound formats recognized by Qt®, with one exception: Flash ADPCM format, which is supported natively.

### To import a sound file:

1. Select **File > Import File**.

You can also right-click (Windows) or [Ctrl]+click (Mac OS X) anywhere in the frame zone of the Xsheet View and select **Import File** from the pop-up menu.

The **Open** dialog box opens.

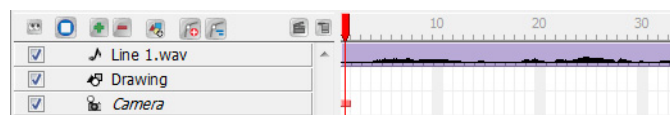
2. From the **Open** dialog box find and select your sound file from your computer.

Your sound file should now appear as a layer in both the Timeline and Xsheet View.

Exposure Sheet view

	Line 1.wav
1	Line 1.wav
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10

Timeline view



## Sound Display

Once you import a sound file into your project, there are many ways to display it in the Exposure Sheet or Timeline view. You can use the waveform, as a guide to synchronise a certain sound peak to an action in your animation, or the Lip-sync mouth display to help you with your lip-sync animation.

### Sound Display - Exposure Sheet View

The sound file can be displayed in four different ways in the Exposure Sheet view.



#### Sound Name

	Line 1.wav
1	Line 1.wav
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10

By default, the sound is displayed showing the name of the sound file, and the file format. For example, *Line 1.wav*.


A numbered exposure appears in each frame for the entire length of the sound file. Whenever there are no other sound display options enabled, this is how the sound column will look.

#### Waveform

	Line 1.wav
4	
5	
6	

This option shows a vertical display of the sound file's waveform, divided into cells. A waveform represents the sound as it rises and falls in volume, silence is shown as a straight line. Notice that 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 turn on the waveform display:**

- ▶ In the Exposure Sheet View toolbar, click on the Thumbnail  button.

#### Lip-sync Mouth Shapes - Name

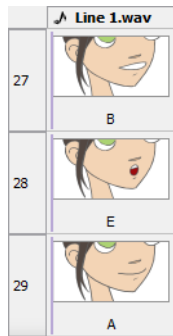
	Line 1.wav
1	X
2	X
3	D
4	D
5	C
6	B
7	C
8	C
9	C
10	C

This option will show the letter or name, depending on the way you label the character's mouth positions, in the column's frames. Only one mouth position is allotted per frame and this position should correspond to the sound file after lip-sync detection is performed.

**To turn on the mouth shapes display:**


- ▶ In the Exposure Sheet view, right-click (Windows) or [Ctrl]+click (Mac OS X) on a cell of the sound column and select **Show Lip-sync** from the pop-up menu.

## Lip-sync Mouth - Thumbnails



This option will show the letter or name, depending on the way you label your character's mouth positions, in the column's frames, and as a thumbnail of the mouth shape.

**To turn on the mouth shapes thumbnails display:**

► click on the Thumbnail  button. You must have already enabled the Show Lip-sync option, in the Exposure Sheet View toolbar.



Refer to the *Lip-sync* topic to learn more about the lip-sync detection.

## Sound Display - Timeline View

By default, the waveform of your sound file is displayed in the Timeline view, but you can choose to show or hide it.

Show Waveform



Hide Waveform



**To show or hide the waveform:**

1. If the waveform is visible, select **View > Hide Waveform** from the top menu.
2. If the waveform is hidden, select **View > Show Waveform** from the top menu.

## Sound Playback

There are two ways you can play back sound in a project. You can either play your animation and the sound or play only the sound.

### Playing the Sound and the Animation

Before attempting to play back a sound, make sure the Sound Playback option is enabled.

**To enable or disable the Sound Playback option:**

- ▶ In the top menu, select **Play > Turn Sound Playback On** to enable the option.
- ▶ In the top menu, select **Play > Turn Sound Playback Off** to disable the option.

You can then play your scene as usual using the Playback toolbar controls and the sound will play as well.

### Playing Only the Sound

When you only play the sound, it is played for the entire length of the currently exposed sound. Unlike the regular playback option, playing only the sound does not restrict your playback to exposed drawing cells.

**To play back only the sound sample:**

1. In the Exposure Sheet view, right-click (Windows) or [Ctrl]+click (Mac OS X) in the sound column's cell at the point you want to start the playback.



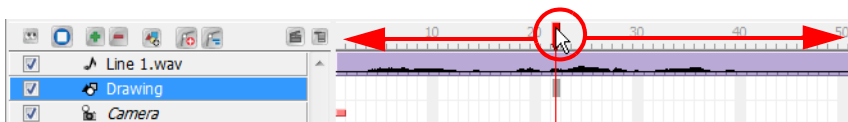
2. Select **Play** from the pop-up menu and the sound plays.

## Sound Scrubbing in the Timeline View

Toon Boom Studio uses a process known as Sound Scrubbing. This lets you hear the sound in real-time as you move the playback pointer forward or backward along the waveform. This is extremely useful if you have to fine tune the lip-synching or sound synchronisation. You can scrub sounds in the Timeline view.

**To scrub a sound in the Timeline view:**

1. Enable the sound for play back. In the top menu, select **Play > Turn Sound Playback On**.
2. In the top menu, select **Play > Turn Sound Scrubbing On**.
3. At the top of the Timeline view, drag the red frame marker left or right along the waveform to hear the sound at each frame.

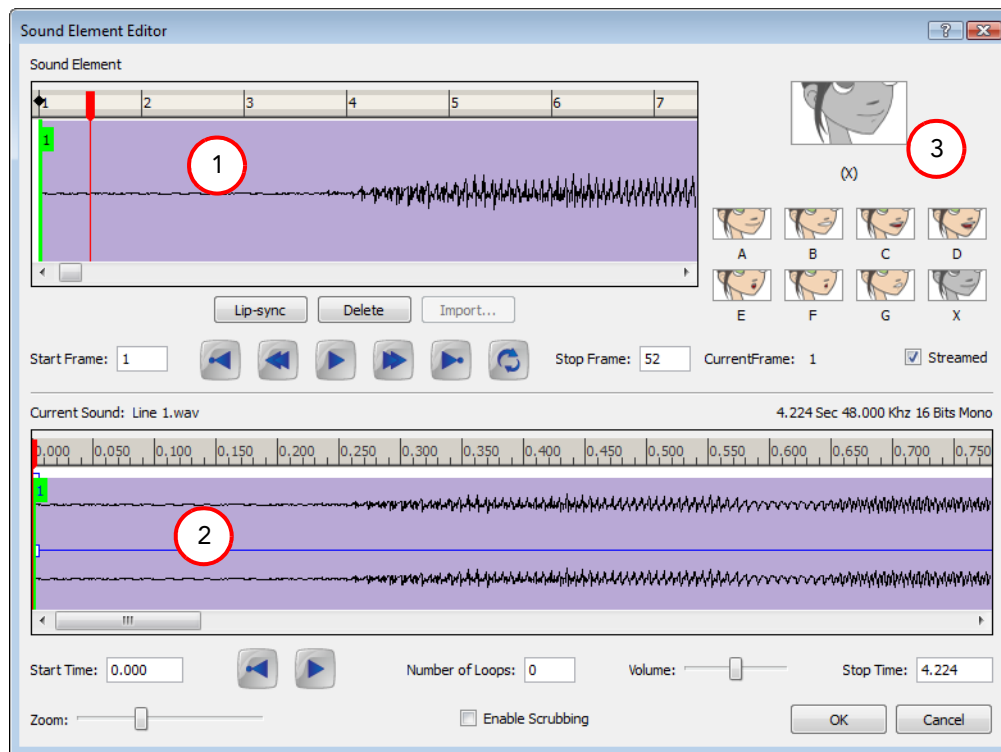


*If you require finer control over the sound scrubbing, you can also enable Sound Scrubbing in the Sound Element Editor. Refer to the Editing a Sound File topic to learn more about the Sound Element Editor.*

## Editing a Sound File

Now that you have successfully imported your sound file into Studio, it is time to familiarize yourself with the sound editing interface. The Sound Element Editor makes it possible to edit sounds that were created outside of Toon Boom Studio and imported into your scene.

The Sound Element Editor consists of three main parts.



1. **Sound Element** - The waveform seen in the top Sound Element window is the actual sample that will be heard when the final movie is rendered. It may be shorter than the original sound sample due to length of the scene. If any edits are made to the sound sample, they can be heard here.
2. **Current Sound** - The Current Sound window displays the original sound file in its entirety. This is also where you can edit its properties. This window remains empty until you click inside the Sound Element window.
3. **Lip-sync Preview** - Is used to preview the automated detection and to manually insert different mouth positions to correspond with the sound sample.




To learn more about lip-sync, refer to *Lip-sync*, on page 329 in this chapter.

You can do the following in the Sound Element Editor:

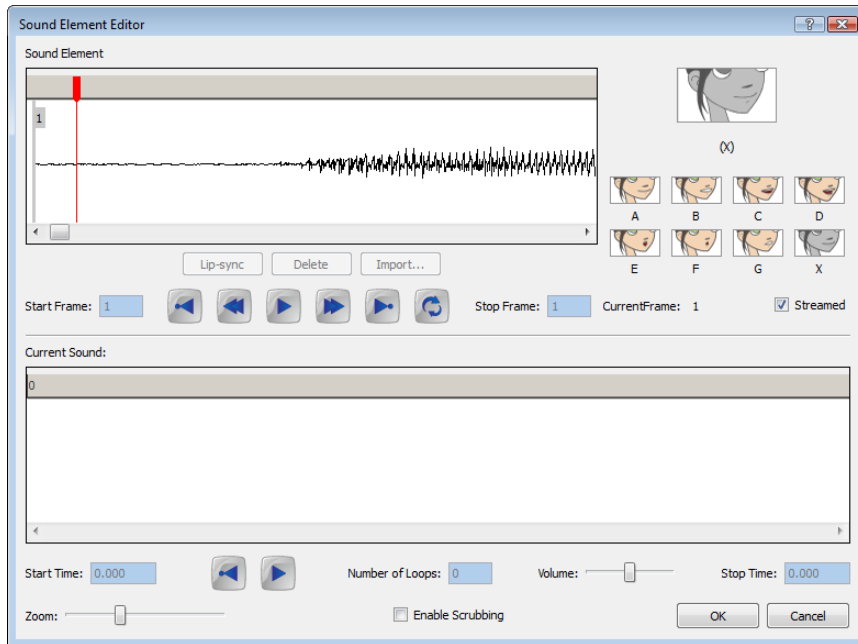
- Changing the Start or End Frame of a Sound, on page 319
- Trimming a Sound File, on page 321
- Looping a Sound, on page 322
- Mixing the Sound Volume, on page 323
- Custom Playback Range, on page 324
- Changing from Event to Streamed Sounds, on page 325
- Sound Scrubbing in the Sound Element Editor, on page 326
- Deleting a Sound, on page 327
- Recomputing the Mouth Chart



**To open the Sound Element Editor:**

1. In the Timeline or Exposure Sheet view, select the Sound element you wish to edit and select **Edit Sound** from the contextual  menu or **Element > Edit Sound** from the top menu. You can also Right-click (Windows) or [Ctrl]+click (Mac OS X) in the Timeline Sound layer or on the Exposure Sheet view Sound Column and select **Edit Sound** from the pop-up menu.


The **Sound Element Editor** opens.

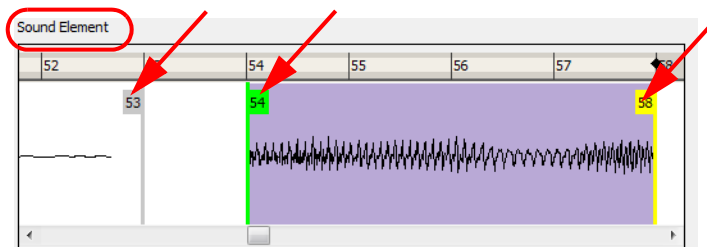


## Changing the Start or End Frame of a Sound

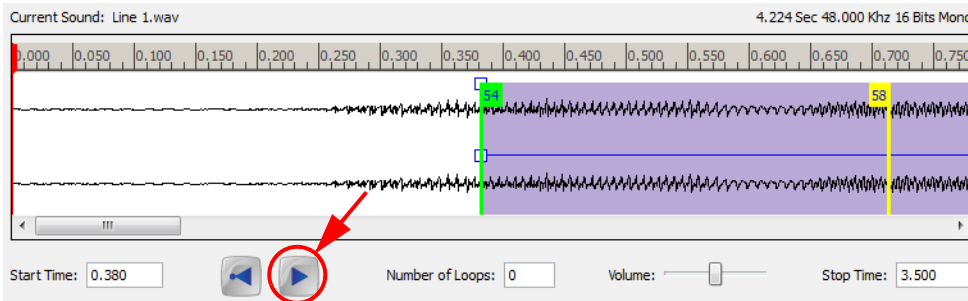
To synchronize the sound with specific images in your scene, you must set a start frame for your sound. To make sure the sound ends at a specific frame, you must set an end frame.

**To change the start frame or the end frame of a sound:**

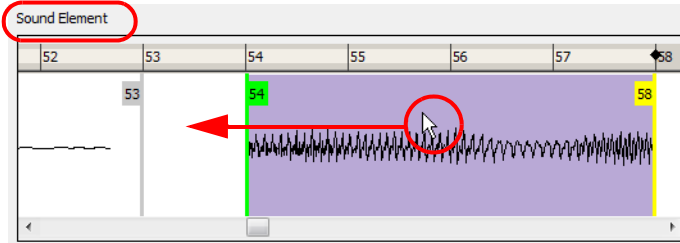
1. In the Timeline or Exposure Sheet view, select the Sound element you wish to edit and select **Edit Sound** from the contextual  menu.  
The **Sound Element Editor** opens.
2. Select the sound sample you want from the **Sound Element** panel. To distinguish one sound section from another on the same sound layer, check the frame numbers that appear on tabs flanking the start and stop lines of each waveform section.



- Click on the Play  button in the **Current Sound** panel (only the selected sound plays).

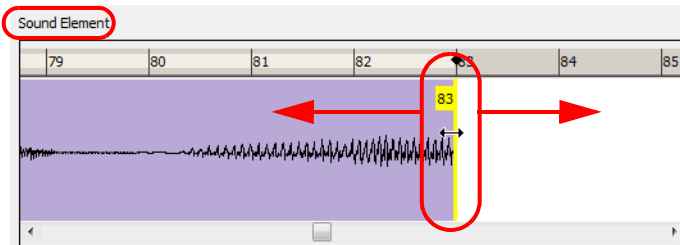



- In the **Sound Element** panel, click and drag the selected clip to the frame number where you want it to start playing.

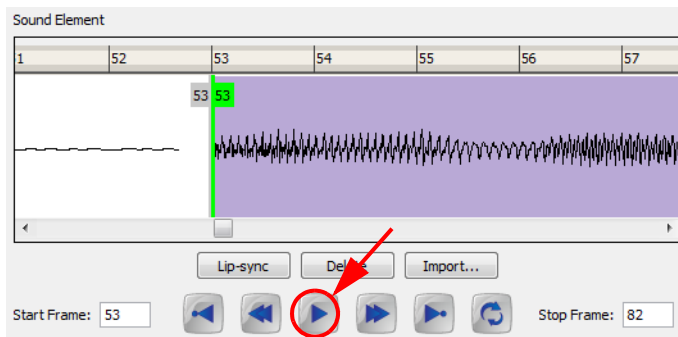



**NOTE:** You can only move the clip to a section that does not already contain a clip; you cannot overlap two clips in the same element.

- To change the end frame, drag the yellow marker at the end of the waveform to the frame position where you want it to stop playing.



- To hear how all of the clips fit together in the element, click on the Play  button in the **Sound Element** panel.




- If you want to hear only the selected clip, click on the Play  button in the **Current Sound** panel.
- Click OK when done.  
The Exposure Sheet and Timeline views should now display the sound clip at the start frame you selected

## Trimming a Sound File

To play only a section of a sound file, use the Sound Element Editor to select the part you want to use. For example, if there is a bit of extraneous noise at the start of the sound, use the **Sound Element Editor** to edit out the noise.

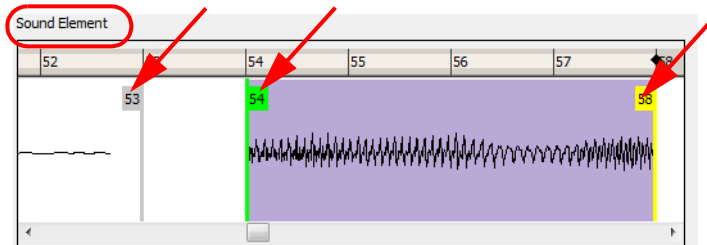
The **Sound Element Editor** does not change the original sound file; it only plays a section of it, ignoring the rest, the complete sound file is still kept in the project. This means that the entire sound file is included on export. If you need to consider restrictions in file size, it is better to completely edit the sound files in a third party sound editor before bringing them into Toon Boom Studio.

**To trim the start and end of a sound file:**

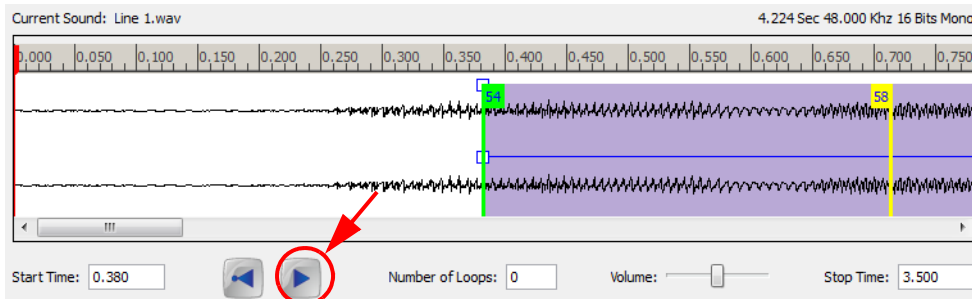
1. In the Timeline or Exposure Sheet view, select the Sound element you wish to edit and select **Edit Sound** from the contextual  menu.

The **Sound Element Editor** opens.

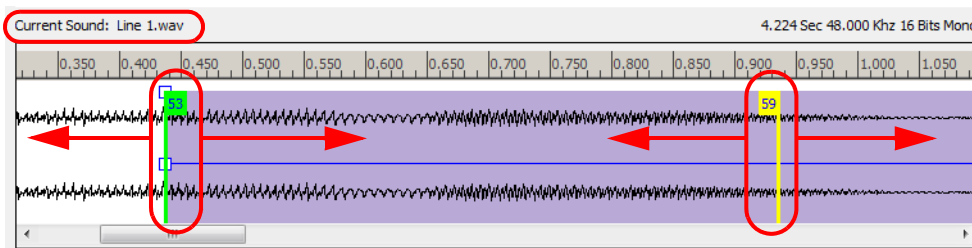
2. Select the sound you want to work on from the **Sound Element** panel. To distinguish one sound section from another on the same sound layer, check the frame numbers that appear on tabs flanking the start and stop lines of each waveform section.




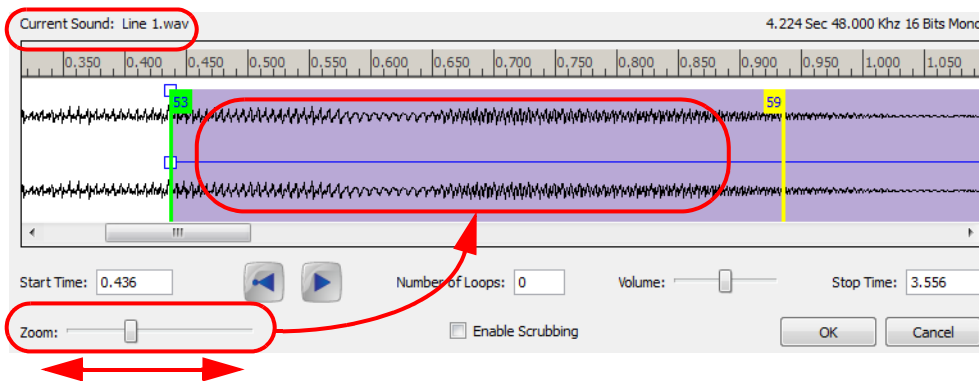
3. Click on the Play  button in the **Current Sound** panel (only the selected sound plays).



4. 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.



- Click on the Play  button in the **Current Sound** panel to play the trimmed sound and check that you have trimmed the sections correctly. Use the Zoom slider at the bottom of the panel to zoom in on the waveform so that you can trim it more accurately.




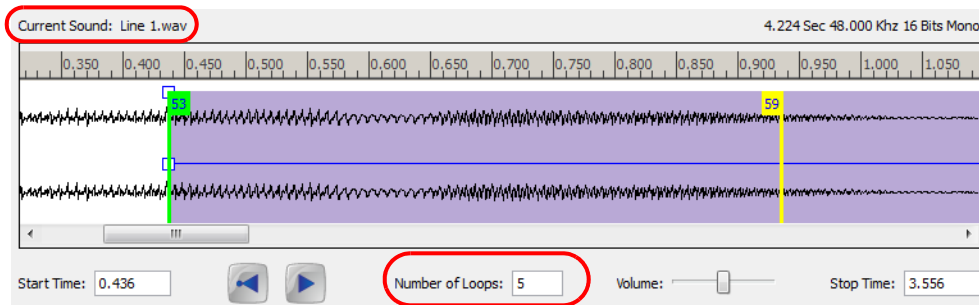
- Once you are sure that the sound is trimmed correctly, click on the OK button. The trimmed sound sample should now appear in both the Timeline and Xsheet Views at the start and end positions that you selected.

## Looping a Sound

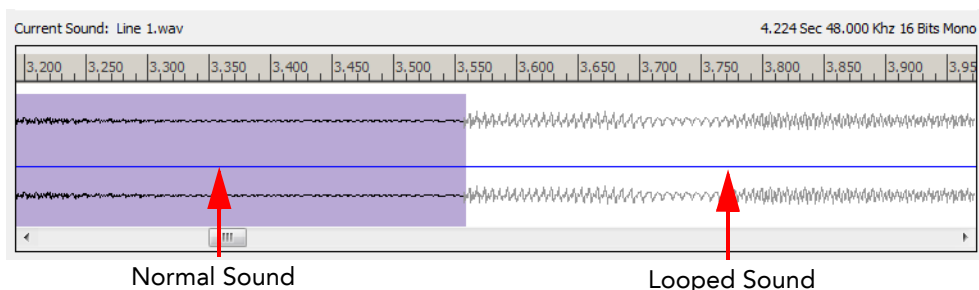
To repeat a sound, you need to specify, in the **Sound Element Editor**, the number of times that you want it to loop.

**To loop a sound sample:**

- In the Timeline or Exposure Sheet view, select the Sound element you wish to loop and select **Edit Sound** from the contextual  menu. The **Sound Element Editor** opens.
- From the **Sound Element** panel, select the sound section that you want to loop.
- In the **Current Sound** panel, type the number of times you want the sound to play in the Number of Loops field.



- Press on the [Return] key. The looped sound appears after the current sound. They are indicated by their grey waveforms, as opposed to black.




When you loop a sound, the looped sections fill the cells in the Sound element (column or layer) until the next sound sample starts or until the scene ends. This means that the looping could effectively get cut if the next sound sample starts too soon, or if the scene ends too quickly.

## Mixing the Sound Volume

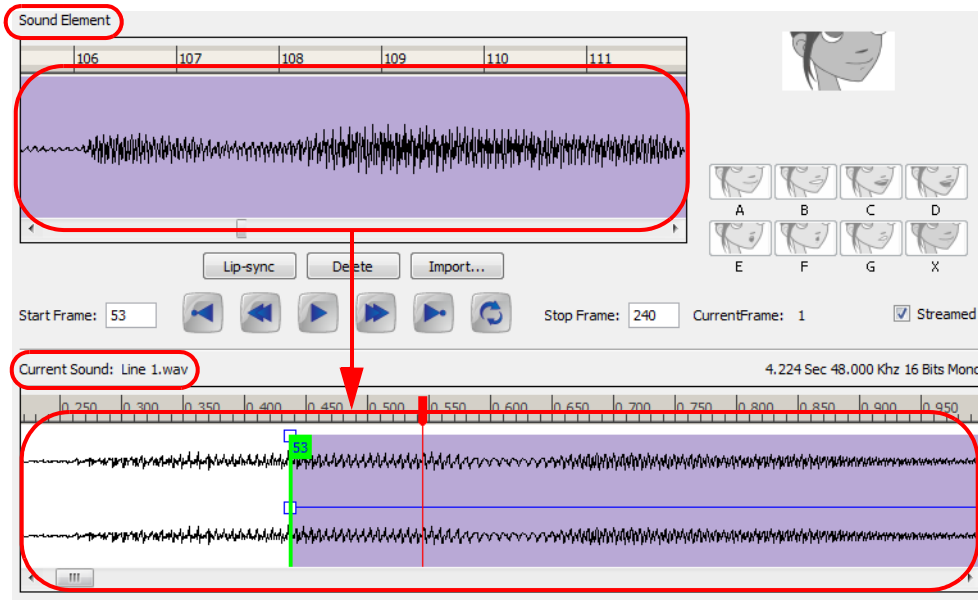
You can adjust the volume of an entire sound clip or modify the volume in increments by adjusting the fade-in and fade-out times. The fade edit only affects the playback; the original sound file is not affected.

**To adjust the overall volume of the entire sound clip:**

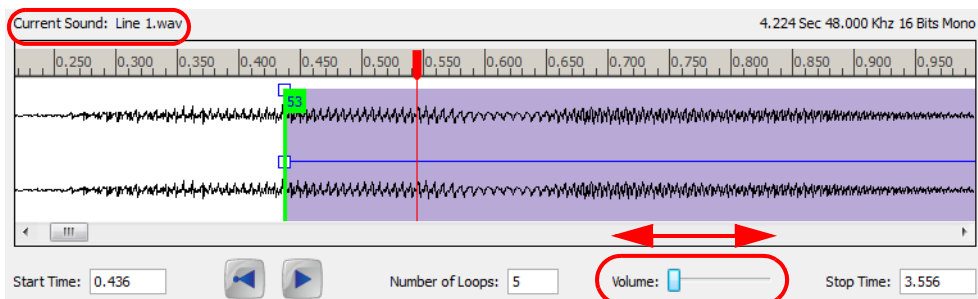
1. In the Timeline or Exposure Sheet view, select the Sound element you wish to edit and select **Edit Sound** from the contextual  menu.

The **Sound Element Editor** opens.

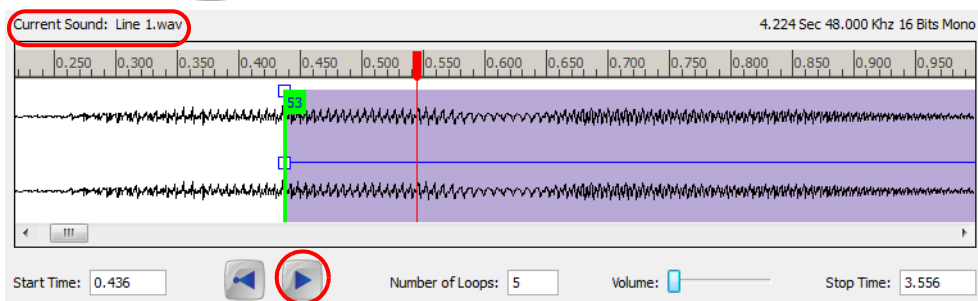
2. In the **Sound Element** panel, select the sound that you want to work on. An expanded version of the selected sound showing more detail appears in the Current Sound panel.




3. In the **Current Sound** panel, use the Volume slider to adjust the volume.



4. Click on the Play  button in the **Current Sound** panel to verify the volume.

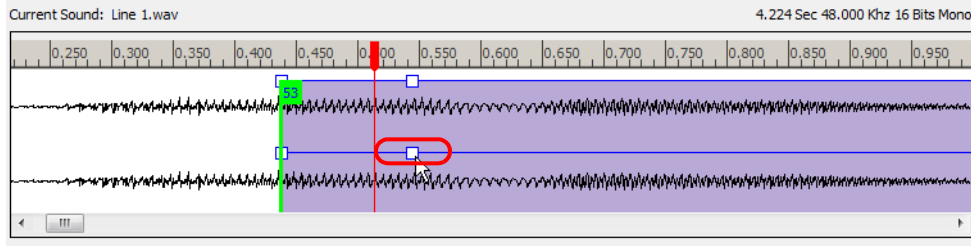


**To create a fade in/out effect on a sound clip:**

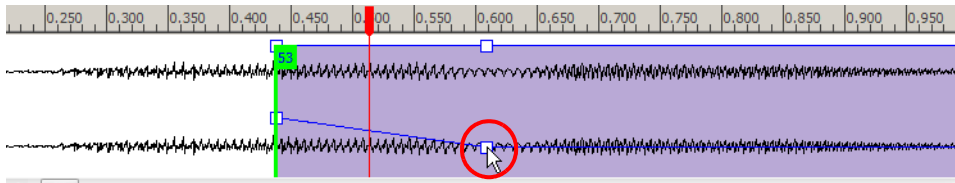
1. In the Timeline or Exposure Sheet view, select the Sound element you wish to edit and select **Edit Sound** from the contextual  menu.

The **Sound Element Editor** opens.

2. In the **Sound Element** panel, select the sound you want to work on.
3. In the **Current Sound** panel, click on the thin blue line above the waveform to add a volume control point.



4. Drag the control point to adjust the volume and to create the time of the transition. The line from the edge of the clip to the control point identifies how the volume either increases (fades-in) or decreases (fades-out) over time.



Dragging the control point to the bottom of the channel will mute the volume, while dragging it upwards will increase the volume. To create an even effect, be sure to adjust the control points uniformly in both the left and right (bottom and top) channels.

5. Click on the Play  button in the **Current Sound** panel to check the fade.


## Custom Playback Range

To hear a specific section of the sound element, adjust the playback range in the Sound Element Editor to start or stop at specific frames. This custom playback range does not affect the actual sound in the Sound element.

**To change the playback range in the Sound Element Editor dialog box:**

1. In the Sound Element Editor, drag the start or end range markers in the Sound Element panel to the boundary frames you want.



2. When you click on the Play  button to playback your sound in the **Sound Element Editor**, it only plays the sound existing between the two markers.

## Changing from Event to Streamed Sounds

You can set up your sounds to be either streamed or event sounds when they are exported to the Adobe®Flash® format.




Refer to the *Exporting Your Project* chapter to learn more about exporting your movie and export formats.

There are two major distinctions between event and stream sounds in the Adobe®Flash® file:

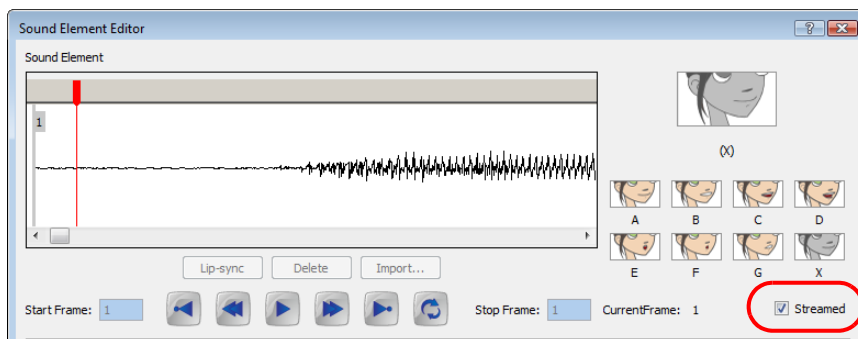
- **Downloading**
  - ⇒ Event sounds are downloaded by the Adobe®Flash® player before they play.
  - ⇒ Event sounds are reusable. Once downloaded, the Adobe®Flash® player can play the sound repeatedly without downloading it again. This is not possible with streamed sound.
  - ⇒ Streamed sound plays as it arrives.
  - ⇒ Streamed sound samples are broken into small bits and inserted between the video frame. This allows the Adobe®Flash® player to start to play before receiving the full sound track which is helpful for a long sound track (like background music).
- **Synchronization**
  - ⇒ Streamed sounds are kept synchronized with the video by the Adobe®Flash® player. The player drops frames if necessary to keep up with the sound.
  - ⇒ Event sounds are not synchronized with video. After a while, an event sound may fall out of sync with the video.

By default, the sounds are set to Event, But because streamed sounds are more likely to be synchronized with the images in your animation, lip sync sounds and sound effects should be set to stream. If you set more than one sound to stream, they will be mixed together and exported as one streamed sound.

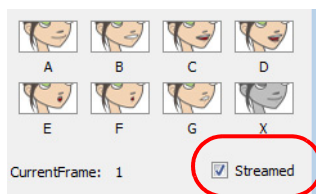
**To stream the sounds in an element:**

1. In the Timeline or Exposure Sheet view, select the Sound element you wish to edit and select **Edit Sound** from the contextual  menu.

The **Sound Element Editor** opens.



2. Enable the Streamed checkbox.




This toggles on and off the streaming sound option. If the option is not selected, the sound is set as an event sound.

## Sound Scrubbing in the Sound Element Editor

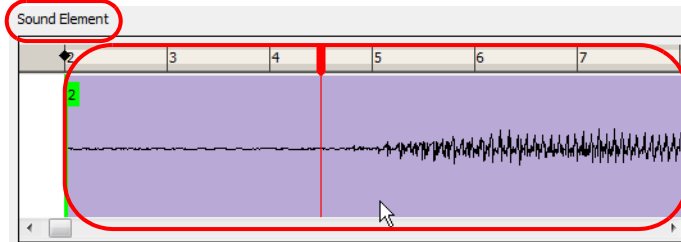
Toon Boom Studio uses a process known as Sound Scrubbing. This lets you hear the sound in real-time as you move the playback pointer forward or backward along the waveform. This is extremely useful if you have to fine tune the lip-synching or sound synchronisation. You can scrub sounds in the Sound Element Editor.

**To scrub a sound from the Sound Element Editor:**

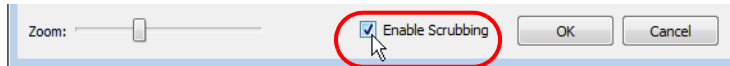
1. In the Timeline or Exposure Sheet view, select the Sound element and select **Edit Sound** from the contextual  menu.

The **Sound Element Editor** opens.

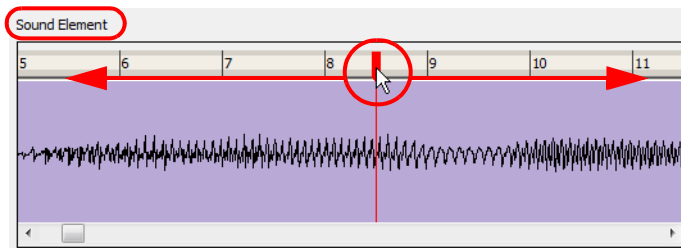
2. In the **Sound Element** panel, select the waveform you want to scrub.



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 left and right to hear the sound in sound scrubbing






## Deleting a Sound

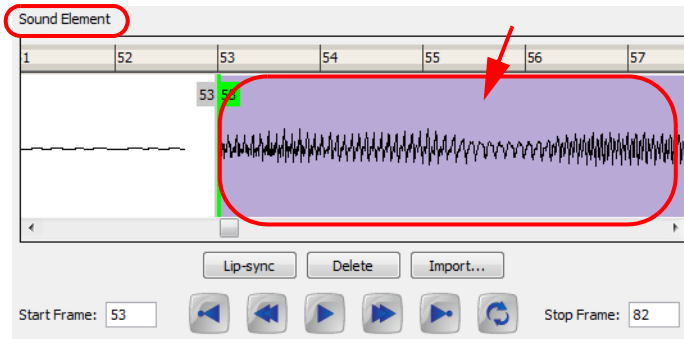
You can delete a sound in the Sound Element Editor.

### To delete a sound:

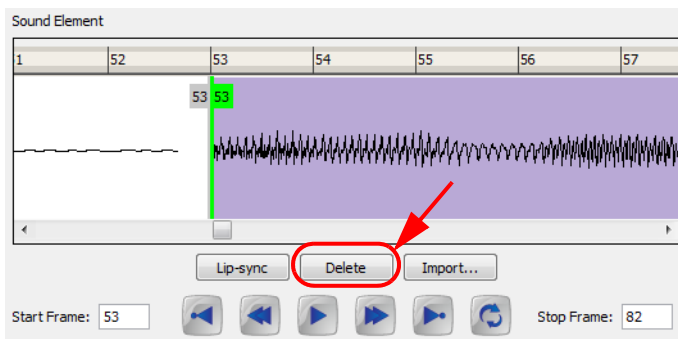
1. In the Timeline or Exposure Sheet view, select the Sound element you wish to remove the sound file from and select Edit Sound from the contextual  menu.

The **Sound Element Editor** opens.

2. Select the sound you want to delete from the **Sound Element** panel. To distinguish one sound section from another on the same sound layer, check the frame numbers that appear on tabs flanking the start and stop lines of each waveform section.



3. Click on the Delete button located just below the Sound Element panel.






The Sound will be removed from the Exposure Sheet and Timeline view.

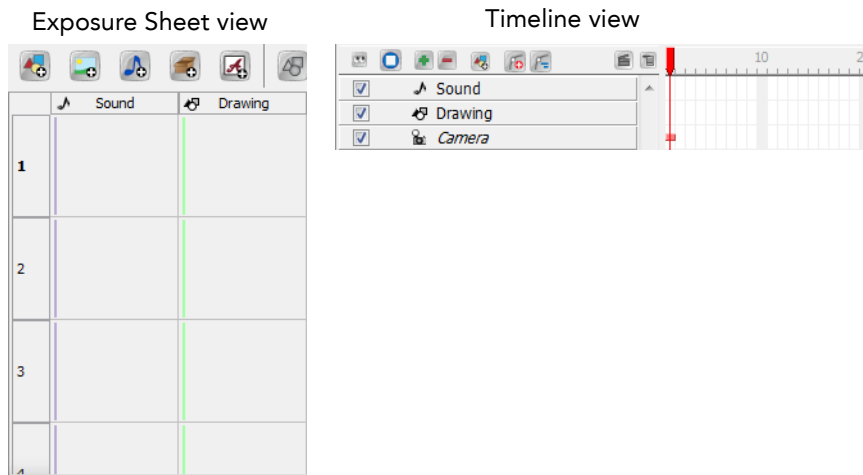
## Adding an Empty Sound Layer

When performing sound editing tasks, it can be useful to chop up a sound sample into different layers. For example, when performing a lip-sync, only a single view of the various mouth positions for a character can exist on one layer. Therefore, if you would like to have your character turn its head from a profile view to a three-quarter view and have mouth position changes to fit with the sound sample from these two different views, you would need to cut-up the sound samples needed for the profile view mouth positions on one layer and the sound samples needed for the three-quarter view on another. For this task, you will need an empty sound layer.

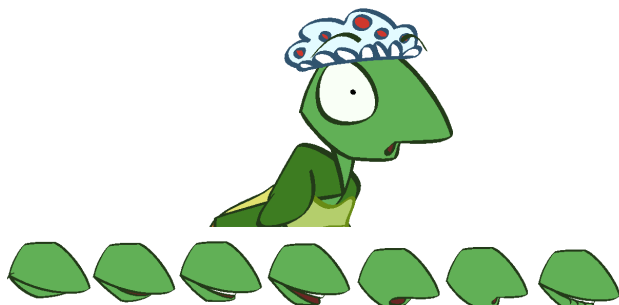
**To add an empty sound layer:**

- ▶ In the Exposure Sheet view, click on the Add Sound  button in the Exposure Sheet View toolbar or select **Add > Sound** from the Exposure Sheet view contextual  menu.
- ▶ In the Timeline view, select **New > Sound** from the Timeline view contextual  menu.
- ▶ You can also select **Element > Add > Sound** from the top menu.

An empty sound element appears in the Exposure Sheet and Timeline view.



## Lip-sync



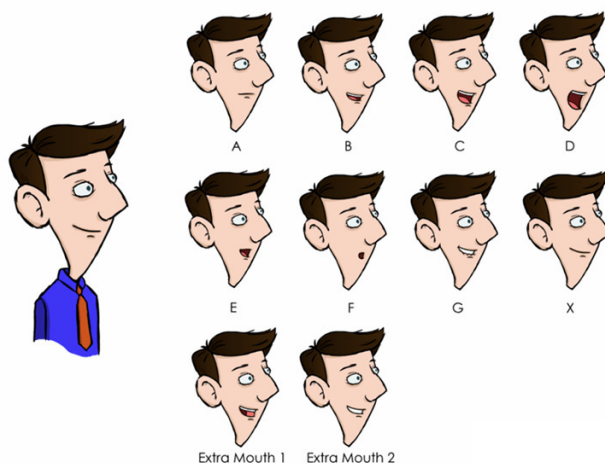
Adding a lip-sync to a project can really enhance its quality and storytelling. However, it can be difficult to shape a character's mouth so that it matches the sound at the precise frame. To solve this problem Toon Boom Studio provides a lip-sync feature which analyses the content of a sound element and generates a mouth chart based (see below) on the eight animation phonemes (A, B, C, D, E, F, G, and X, which is used to represent silence).

The mouth shapes used by Toon Boom Studio are based on the conventional mouth chart used in the animation industry. The letters used to represent the shapes do **NOT** correspond to an actual sound.

Here is an approximation of which sound each mouth shape can produce:

Mouth Shape	Approximate sound the mouth shape matches to
A	b, m, p
B	d, h, i, j, k, s
C	a, e
D	A, E
E	o
F	oo, u
G	f, ph
X	Silence, undetermined sound

You can lip-sync the traditional way or let the system automatically create the basic detection.



You can refer to the mouth chart positions as you draw the shape of your character's mouth.

This section explains:

- Creating a Mouth Chart, on page 330
- Automatic Lip-sync Detection, on page 331
- Modifying the Lip-sync Detection, on page 332


## Creating a Mouth Chart

To generate a mouth shapes chart for a sound from the Exposure Sheet view:

1. In the Exposure Sheet view, right-click (Windows) or [Ctrl]+click (Mac OS X) on a cell of the sound column and select **Show Lip-sync** from the pop-up menu.


Toon Boom Studio analyzes the selected sound clips and assigns a lip-sync letter to each sound cell.



You can enable the Thumbnails display option to show a preview image of the mouth shape. Once you enable the Show Lip-sync option, in the Exposure Sheet View toolbar, click on the Thumbnail  button.

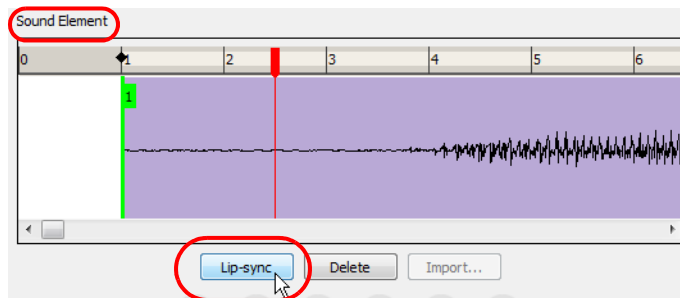
Toon Boom Studio analyzes the selected sound clips and assigns a lip-sync letter to each frame. The numbered exposition in the frame are replaced by these designated letters.

To generate a mouth shapes chart for a sound using the Sound Element Editor:

1. In the Timeline or Exposure Sheet view, select the Sound element you wish to generate a mouth shapes chart from and select **Edit Sound** from the contextual  menu.

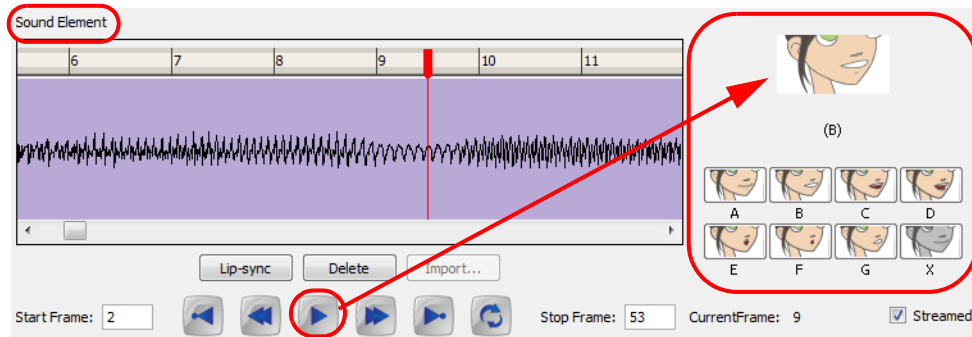
The **Sound Element Editor** opens.

2. In the Sound Element panel, select the waveform you want to generate the mouth chart for and then click on the Lip-sync button.



A progress bar appears as Toon Boom Studio analyzes the selected sound clips and assigns a lip-sync letter to each sound cell.

3. You can playback your sound and the Lip-sync Image area will show a preview of the result of the detection.



## Automatic Lip-sync Detection

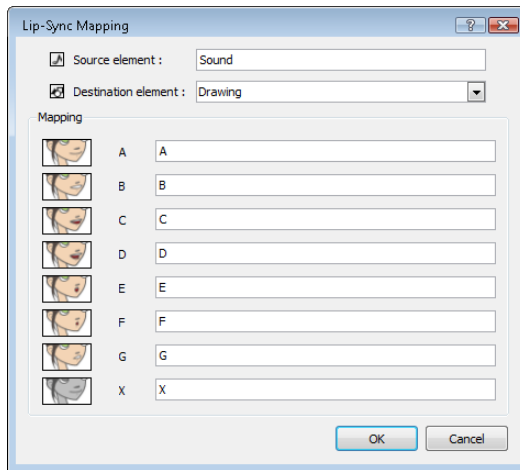
Toon Boom Studio can automatically map drawings in an element to the mouth chart you have generated for a sound using the Lip-sync button in the **Sound Element Editor** dialog box. This can save time when you are lip-syncing a voice track.

This means that in the Lip-Sync Mapping dialog box, you can identify each lip drawing of a character mouth element. Studio then automatically labels all of the cells in the character's element with the appropriate name.

**To automatically map lip-sync drawings to a mouth chart:**

1. In the Exposure Sheet view, right-click (Windows) or [Ctrl]+click (Mac OS X) on header of the sound element that has already been lip-synced and select **Modify Lip-Sync Mapping**.

The **Lip-Sync Mapping** dialog box opens.

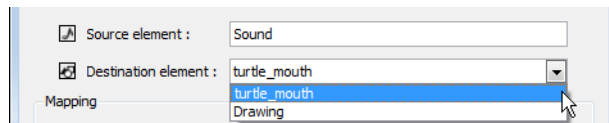


▶ **Source element**

This field shows the Sound element from which the Lip-sync mapping will be based.


▶ **Destination element**

Use this drop-down menu to select the element that contains the mouth shapes of your character.



▶ **Mapping**

In this section, type the destination drawing name in each field corresponding to the mouth phoneme the thumbnail on the left represents. If your drawings are already named using the standard phoneme letters, you do not need to change anything.

2. Click on the OK button.
3. Press the Play  button in the Playback toolbar to see and hear the results in the Camera view.
4. To playback your scene with sound, enable the sound if it is not already done. In the top menu, select **Play > Turn Sound Playback On**.

## Modifying the Lip-sync Detection

If you think that another position would be more appropriate, you can change the mouth position that has been assigned to a frame.

For example, you may have a character who remains silent for ten frames, in between two speeches. Toon Boom Studio would normally assign an X image to the silence. However, if you want your character's mouth to hang open in astonishment for these ten frames, you can change the lip assignment for these frames from an X to an E.

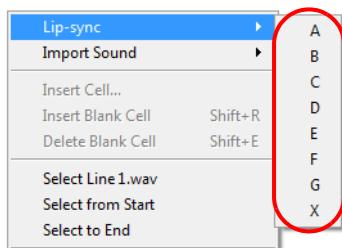


You can modify the lip-sync from the Exposure Sheet view and from the Sound Element Editor.

### Modifying the lip-sync from the Exposure Sheet view

**To change the lip assignment of a sound in the Xsheet:**

1. In the Exposure Sheet view, right-click (Windows) or [Ctrl]+click (Mac OS X) in the cell that contains the mouth position that you want to change.
2. From the pop-up menu, select **Lip-sync** > **A, B, C, D, E, F, G** or **X**. Choose the letter that reflects the mouth position that you want to use for that sound.

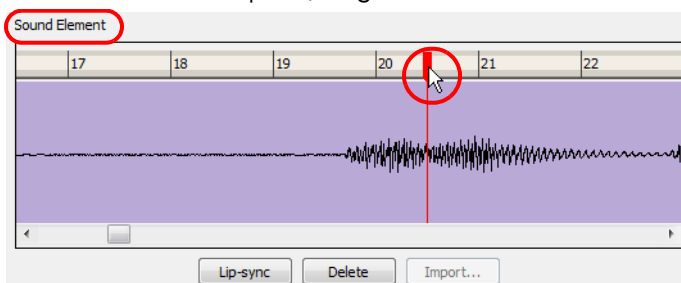


The drawing will automatically be updated in the Exposure Sheet and Timeline view.

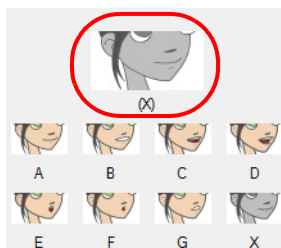
### Modifying the lip-sync from the Sound Element Editor

**To change the mouth position assignment of a sound from the Sound Element Editor:**

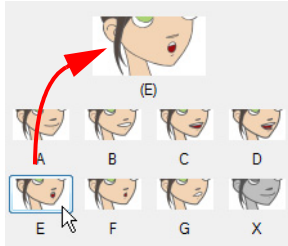
1. In the Timeline or Exposure Sheet view, select the Sound element you wish to modify the lip-sync of and select **Edit Sound** from the contextual menu.
2. In the **Sound Element** panel, drag the frame slider to the frame you want to change the mouth position on.



In the Lip-sync image area, the image on top represents the lip position assigned to the current frame.



- To change the image assigned to the frame, click on the image of the mouth position you want from below the preview image. The preview image changes to the mouth position image you select.



The position will also be updated in the Exposure Sheet and Timeline views.

## Recomputing the Mouth Chart



Recomputing the mouth chart erases any manual modifications you may have made to the mouth assignments in the mouth chart.

When you generate the mouth chart for a sound in a sound element, you can either accept the mouth positions assigned by Toon Boom Studio or assign your own lip-sync images.

However, if you change the sound's start frame, edit it or reassign its mouth position afterward, you must reanalyze the sound and regenerate the mouth chart for it.

**To recompute the mouth chart for a selected sound from the Sound column:**

**NOTE: Recomputing erases modifications, see warning above.**

- In a Sound column in the Exposure Sheet, right-click (Windows) or [Ctrl]+click (Mac OS X) on a cell that contains the sound file you want to recompute the lip-sync for and select **Recompute Lip-sync** from the pop-up menu.

The mouth position assignment for each frame is recomputed, erasing any modifications you have made.

**To recompute the mouth chart for a selected sound from the Sound Element Editor:**

**NOTE: Recomputing erases modifications, see warning above.**

- In the Timeline or Exposure Sheet view, select the Sound element and select **Edit Sound** from the contextual menu.

The Sound Element Editor opens.

- In the Sound Element panel, select the waveform you want to recompute the mouth chart for. And click on the Lip-sync button.

## What's Next?

So far, you have learned about:

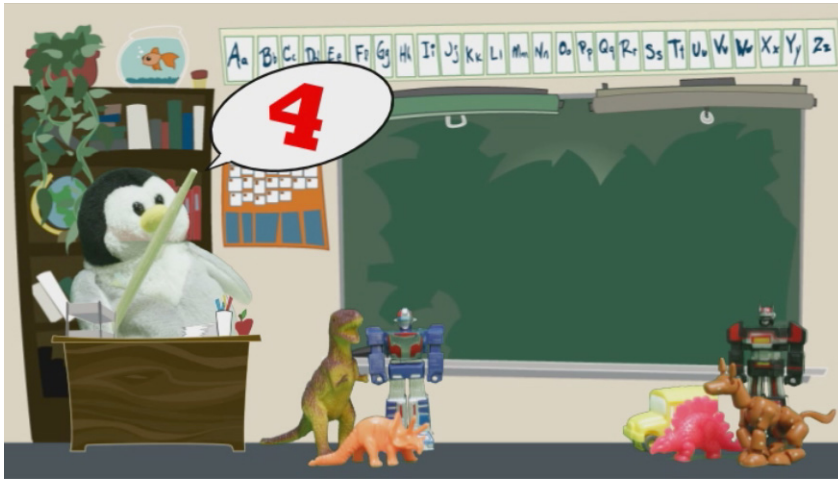
- Importing a Sound File
- Displaying Sound
- Playing Back Sound
- Using the Sound Element Editor
- Editing Sound
- Lip-synching

Is it now time to learn about using Toon Boom Studio to create a stop-motion animation project.





# Chapter 13 Stop-motion Animation



Stop-motion animation has been around since animators first realized that all it took was to nudge a clay figure, puppet or object and take a series of snapshots to produce the illusion of motion. In this digital age, the process has only become easier and more fun as it is now possible to mix in 2D animation.

Toon Boom Studio has an integrated image capture feature. An intuitive and easy to use image capture window allows you to set up and capture all your images. It is as easy as plugging in your recording device, be it a digital, video or web camera, fixing the settings in the software, keying out the background and taking the snapshots.

This chapter is divided into the following sections:

- Characters and Stage, on page 336
- Image Capture Settings, on page 337
- Light Table and Onion Skin, on page 339
- Colour Keying, on page 341
- Image Capture, on page 343
- Vectorization and Clean-Up, on page 344
- What's Next?, on page 345

## Characters and Stage

Before you begin, it is important to gather the characters that you intend to use and to set up a stage on which to record your stop-motion animation.

### Gathering Your Characters



When deciding on characters, it is best to look for or create figures that have ball and socket joints for full rotary movement. Just like a cut-out puppet, you want to be able to move your principal character at the shoulders, legs, knees and elbows if possible. If you choose to create or use characters that have less mobility, your animation might look a little stiff, which is not necessarily a bad thing if this is the look you are going for.

### Setting Up Your Background



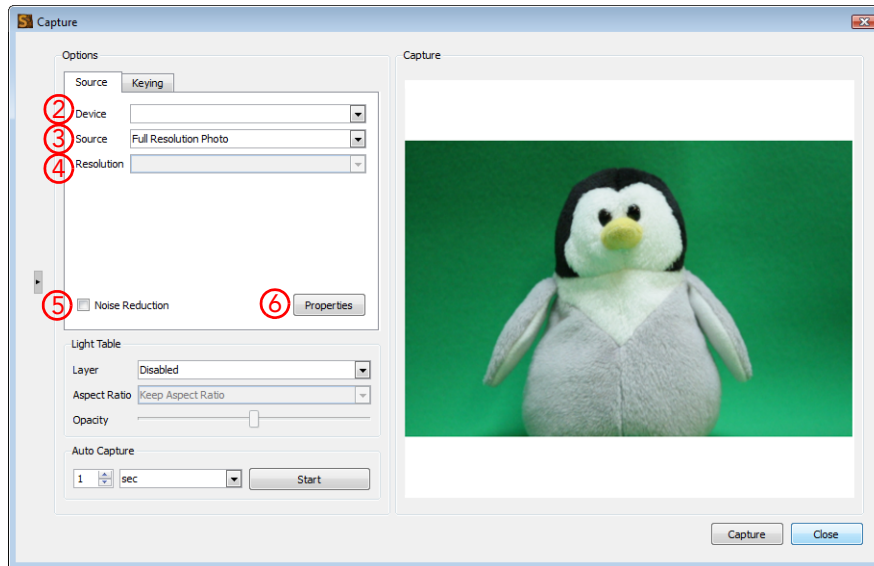
Depending on whether you would like a 2D or 3D environment, you will have to set up your background accordingly. If you prefer a 3D background, then you would treat the elements in the same manner that you treat your stop-motion characters. If you would like a 2D cartoon background, then you will need to set up what is known as either a blue or green screen.

A blue or green screen is a solid coloured piece of fabric that can easily be selected and blocked out in the software. This process is known as colour keying. You can then superimpose another background, be it a 2D drawing created in Studio, a 3D photograph or a piece of video footage.

An important element to consider when setting up either a green screen backdrop or a stop-motion setting, is the lighting. In the case of a green screen, soft, flat lighting can be the key to making the material look smooth and shadowless. The fewer variations in tone, the easier it will be to key out the colour later on. Lighting does not necessarily mean a multi-lamp setup; a well lit room with natural daylight can often work best.

## Image Capture Settings

Before you start, be sure that your image recording device is plugged into your computer and turned on. Follow the camera manufacturers instructions on how to connect the camera to a computer. It is recommended for the stop-motion image capture process that you support your camera in a fixed position by either using a tripod or some other mounting system. The camera must be rigidly fixed, any movement of the camera, shaking, vibration etc. will affect the captured images, the only items which should move are the items on the stage.



### Setting-Up the Image Capture Options

To set up the software for image capture:

1. From the File menu, select **Acquire > From Capture Device**.  
The **Image Capture** window appears.
2. In the Options section, under the Source tab, find and select your recording device from the Device drop-down menu.
3. From the Source drop-down menu, select Full-Resolution Photo, if it is available for your recording device (some devices, such as webcams may not allow for this option). Otherwise, if you would prefer to take faster, lighter images for a rough test, select Live Preview.



*The Capture window can be used to capture more than just live physical models with a recording device. You can also "capture" hand-drawn images with the use of a scanner.*



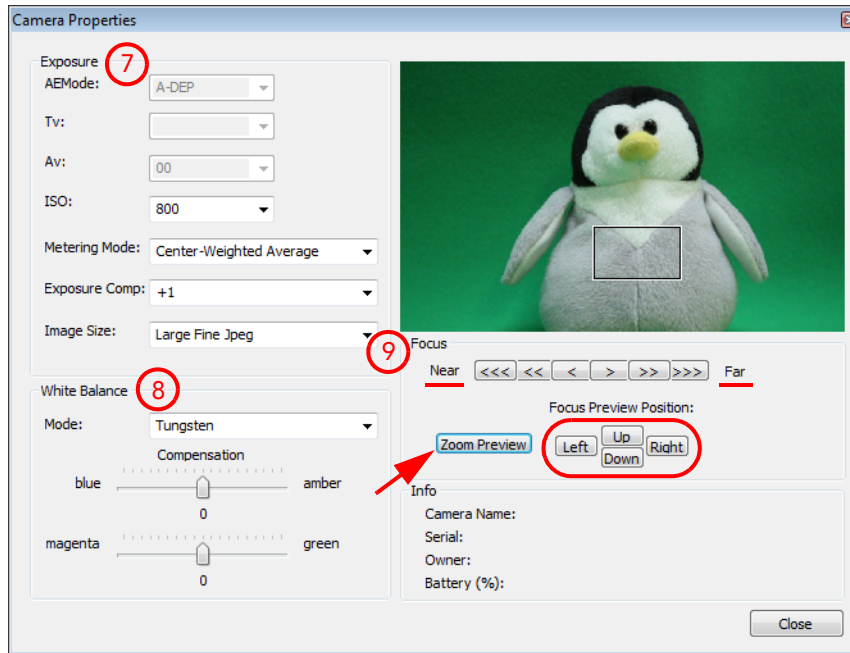
*To learn more about scanning from TWAIN, refer to the Importing Images chapter.*

4. If you are using a scanner with a WIA driver (Windows Image Acquisition), the Resolution drop-down will be enabled. From the list, select the resolution at which you would like to scan your images.
5. If you wish to smooth out some of your colours, check the Noise Reduction option. If you wish to capture more detail, leave this option unchecked.
6. Click on the Properties button.

The **Camera Properties** window appears.

This is an example of a typical Camera Properties window.

**NOTE:** The Camera Properties page is different for every capture device. The information displayed on that page comes from the device itself and will therefore contain different options for each device.



7. Most of the settings that you see in the Exposure section are set manually on your camera. If you change a setting in the software, such as the ISO, it will be changed on your camera. If you change a setting on your camera, it in turn will be changed in the software.
8. In the White Balance section, play with the options from the Mode drop-down and select the one relating to your lighting set up, or until the colours in the preview window displays evenly balanced colours. Make fine tune adjustments with the colour sliders.
9. In the Focus section, use the Near and Far increments to bring the preview image into focus. For greater focal detail, use the Left, Right, Up and Down buttons to move around the Zoom Preview rectangle in the preview window. When you find a good section to examine, such as an area of high-contrast, press on the Zoom Preview button to view that section in detail. Use the Near and Far increments to make finer adjustments.
10. Click on the Close button.

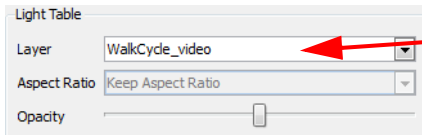
## Light Table and Onion Skin

The Light Table feature for stop-motion image capture can be used in two different ways: as a light table or as an onion skin option. As a **light table**, it can be used to display a series of images, such as JPEGs of a walk-cycle, behind the live image in the preview window. This can be useful if you wish to use a template for the stop-motion poses that you need. As an **onion skin option**, the preview window would display the live image with the one that was captured just moments before.

The different uses of the light table are based on the layer selected in the Layer drop-down menu. Choosing the same layer as the one you are capturing the images on will enable the Onion Skin option. Selecting any other layer will serve as a reference when capturing images for the stop-motion. Only image (bitmap) layers, as opposed to drawing (vector) layers, will appear in the drop-down.

### To use the Light Table feature:

1. From the Layer drop-down menu, select the layer that you wish to see in the preview window.



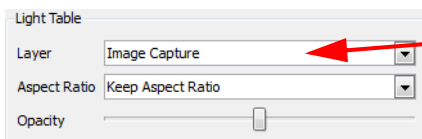
*Use a video as a template to mimic the poses for a walk-cycle*

2. If the images that you are capturing do not have the same ratio as your TBS project (for example 16:9 instead of 3:4) the Aspect Ratio drop-down menu will be enabled. Select the ratio option that suits your needs.
3. Use the Opacity slider to control the transparency of the image being seen through the light table or onion skin.



### To use the Light Table feature as an Onion Skin option:

1. Capture the first image without specifying the Layer to be used as a reference (i.e. in the Light Table section, the Layer drop-down menu is set to Disabled).

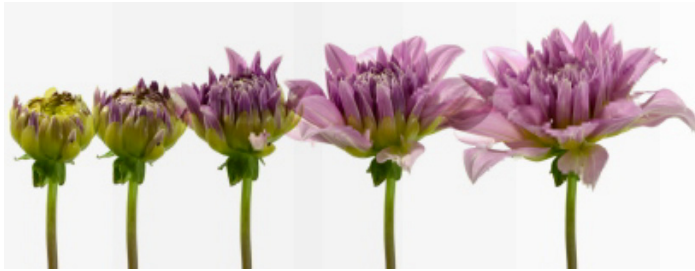


*Selecting the layer on which the stop-motion images are being recorded creates an onion skin effect in the preview window*

2. Once the first image is captured, go to the Layer drop-down menu and select the layer that the image has been captured on.
3. If the images that you are capturing do not have the same ratio as your TBS project (for example 16:9 instead of 3:4) the Aspect Ratio drop-down menu will be enabled. Select the ratio option that suits your needs.
4. Use the Opacity slider to control the transparency of the image being seen through the light table or onion skin.

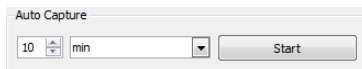
## Capture Features

### Auto Capture



Although some motions are easy to record by posing and reposing a figure while taking snapshots in between each movement, others are not. The Auto Capture feature allows you to automatically record movement when it is not practical to manually press the record button in succession. For example, capturing a ball dropping, or an event which takes place over an extended period of time, such as a time-lapse recording of a sunset.


**To use the Auto Capture feature:**

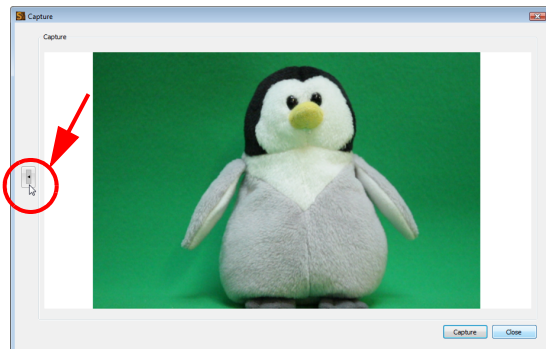


1. In the Auto Capture section, select a number of increments from the first drop-list.
2. From the second drop-list, select the units (msec, sec, min, hour, day).
3. When ready, click on the Start button.

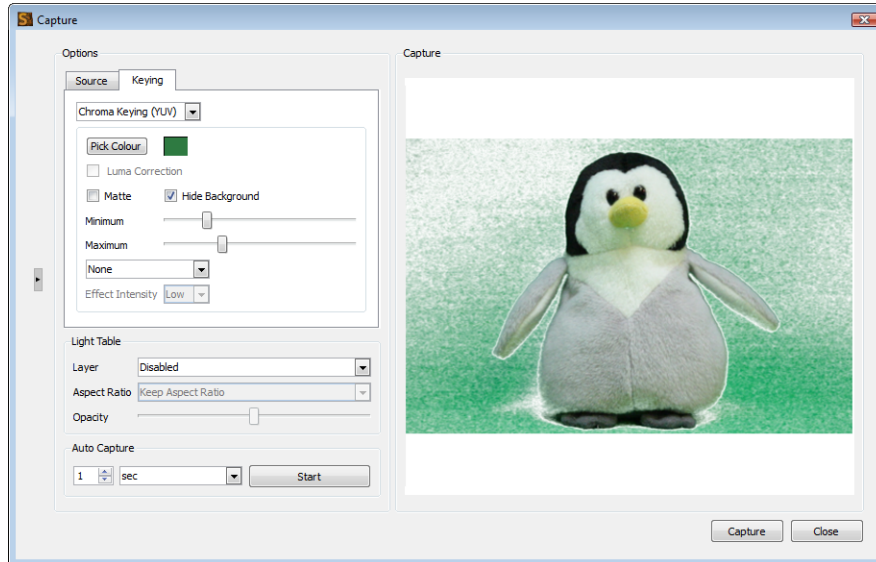
### Preview Window

You can expand the preview window in the Image Capture window if it is not large enough for you to see all the details

of the elements in your scene. Click on the Show/Hide Capture Options  button to expand this window.



## Colour Keying

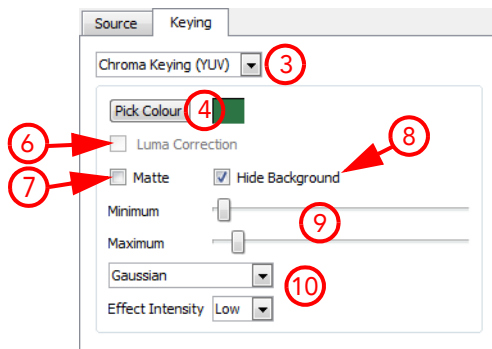


One of the ways that Toon Boom has ensured greater flexibility for your stop-motion projects, is by including the Colour Keying feature. With this feature, you can easily remove the background around your character and replace it with an hand-drawn background instead.

In order for the Colour Keying feature to work, it is essential that you place a solid coloured fabric behind your character so that it hides anything else that might appear in the camera frame.

### To key out your coloured background:

1. If it is not already open, from the File menu, select **Acquire > From Capture Device** to open the Image Capture window.
2. Click on the Keying tab.



The numbers in this diagram refer to the steps shown below.

3. From the first drop-down menu, select the Keying type. It is recommended that you select the type that shows the most sensitivity to your background. This might not be obvious until you pick the colour that you wish to key out. You can gauge sensitivity by the amount of dancing pixels seen in the preview window.
  - ▶ Chroma Keying (YUV) - YUV is a colour model (like RGB or CMYK) that encodes a colour image or video taking human perception into consideration. It allows transmission and compression errors to be more efficiently masked by the human perception than when using an RGB-representation. Mainly choose YUV if your recording device conforms to certain YUV standards.
  - ▶ Chroma Keying (RGB) - The RGB colour model is an additive colour model in which red, green, and blue light are added together in various ways to reproduce a broad array of colours. RGB is a device-dependent color space: different devices detect or reproduce a given RGB value differently. Thus an RGB value does not define the same color across devices without some kind of colour management.
  - ▶ Luma Keying - Luma corresponds to the brightness in an image i.e. the "black and white" portion. Luma is typically paired with chroma. Luma represents the achromatic image without any colour, while the chroma represents the colour information. Converting the output of a camera into luma and chroma allows a video

system to optimize its performance for the human visual system, since human vision is more sensitive to luminance ("black and white") detail than colour detail.

4. Click on the **Pick Colour** button.
5. Use the eye dropper to select your background in the preview window. If there are some unavoidable highlights and shadows on your green screen, try to select a mid-tone area. The selected colour will appear in the swatch area beside the Pick Colour button.

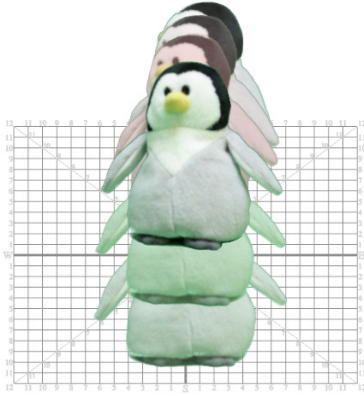
Your preview window should come alive with dancing pixels.

6. If you selected Luma Keying as the keying type, you can also check Luma correction to help even out the image so that it is easier to extract a drawing from the background.
7. If you selected either of the chroma keying types, check the Matte option if you wish to render the preview window achromatic. This option can make the keying process visually easier by seeing the selected portion being reduced to black and the keyed out portion being reduced to white.
8. Check the Hide Background option, if you wish to see which part of the image will be rendered transparent.
9. Play with the Minimum and Maximum sliders until your background disappears into a solid white (or transparent depending on which options were selected).
10. If there are still green areas remaining, try selecting one of the effects from the drop-down menu and chose the degree of Effect Intensity until you see a clean white or near clean white background in the preview field.

You should now be ready to capture images for you stop-motion animation.



## Image Capture

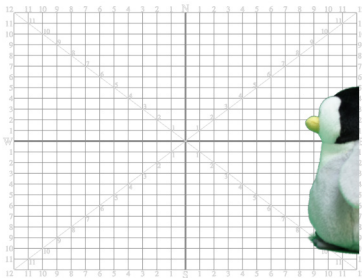


This is the easiest part of the stop-motion animation process. Click on the Capture button and watch your images being recorded as a string of frames along the timeline, on an Image Capture layer that was automatically created.

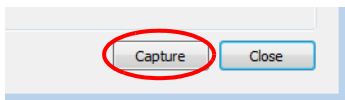
**NOTE:** if you are using a video camera, it will act as a still-frame camera; it will only capture the single images within its field of view.

**To perform an image capture:**

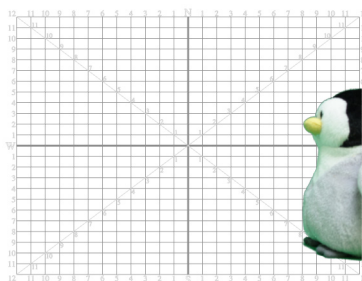
1. Set up your first pose. Use the preview window and the recording device viewfinder to make sure that it is correctly framed.



2. When you are ready, click on the Capture button.

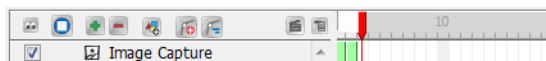


3. Reposition your character and/or other elements on your stage. The smaller the movement, the smoother your animation will be.



4. When you are ready, click on the Capture button.

At this point, your Timeline should look something like this. Each frame represents an image capture.



5. Repeat this process until you have completed your motion sequence.
6. When you are finished, click on the Close button.

## Capturing Images in an Existing Layer

Instead of recording all the images that you need in one go, you may decide to chop up the action sequences into different recording sessions. However, if you do this you may notice that each time you close the Capture window and then start up again, the software automatically creates a new Image Capture layer.

**To add image captures onto an existing layer:**

1. In the Timeline or Xsheet view, right-click (Windows) or [Ctrl] + click (Mac) on the empty cell where you would like the new captures to begin.
2. From the pop-up menu select **Import Images > From Capture Device**.  
The Capture window appears.
3. Continue with the capture process as detailed above.

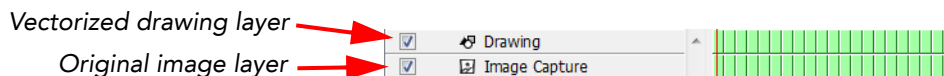
## Vectorization and Clean-Up


After finishing recording your stop-motion animation, you may notice that your character was not as cleanly keyed-out as you would have liked. The fastest way to resolve this problem is to perform a clean-up. However, you cannot execute a clean-up without first converting your bitmap image sequence into vectors with a bitmap texture fill.

**To vectorize and clean up your image sequence:**

1. In the Timeline view, select and right-click (Windows) or [Ctrl] + click (Mac) on one of the cells in the Image Capture layer.
2. From the pop-up menu, select **Convert Element to Vector**.

A new Drawing layer should appear above your original layer with the same number of cells now converted into vectors.



3. In the Timeline view, select the first cell of the Image Capture layer.
4. In the Drawing view, use the Contour Editor  tool to delete or move vector points until you have a clean outline around your bitmap fill.



5. Scrub through your animation to check for any anomalies in the contour of your character.

## What's Next?

So far, you have learned about:

- Choosing a Character
- Setting Up a Stage
- Properties of the Image Capture feature
- Using the Light Table
- Creating an Onion Skin Effect
- Colour Keying
- Image Capture
- Vectorization and Clean-Up

Next you will learn all about how to set up a scene.



# Chapter 14 Scene Setup



Setting up your scene can be compared to building a set for a television show. This is the point where you position each scene element such as the Camera frame, the background elements and the characters.

In this chapter, you will learn about the following:

- Importing the Scene Elements, on page 348
- Ordering the Element Layers, on page 349
- Positioning the Scene Elements, on page 351
- Cloning and Duplicating Elements, on page 355
- Setting the Camera Frame, on page 358
- Creating a Multiplane, on page 362
- Creating a Motion Path, on page 366
- Animating the Camera, on page 379
- Function Editor View, on page 381
- Other Options, on page 389
- Preferences, on page 396
- What's Next?, on page 399

## Importing the Scene Elements

The first step when building your set, is to gather up the scene's elements and import them into your Toon Boom Studio project.

### Background, Sound or Movie



Refer to the *Importing Artwork* chapter to learn how to import different types of elements inside your scene.

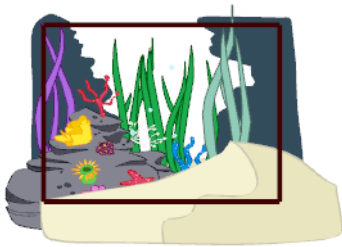
Refer to the *Sound and Lip-sync* chapter to learn how to import sound files.

### Show Scene Background Colour

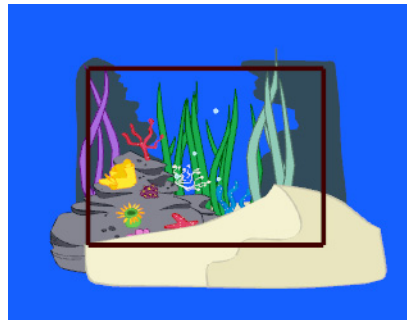
If you have no background and want to use your Scene Background Colour as a colour card, enable the Show Scene Background Colour option. A colour card has no boundary.



By default the Scene Background Colour is set to white. To learn how to set your own colour card colour, refer to the *Starting Your Project* chapter.



Disabled



Enabled

To enable the Show Scene Background Colour option:

- ▶ Select **View > Show Scene Background Colour**.

To disable the Show Scene Background Colour option:

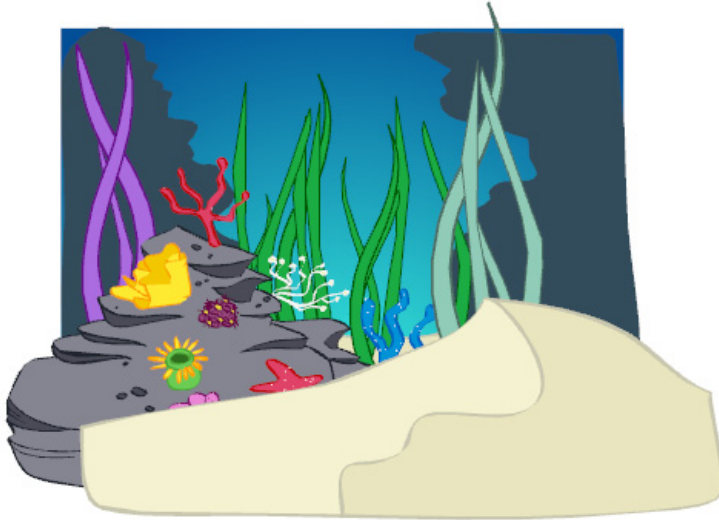
- ▶ Select **View > Hide Scene Background Colour**.

### Templates



Refer to the *Importing Artwork* chapter to learn how to import elements from the Library view.

## Ordering the Element Layers



When you import the elements of your scene, they might not appear in the right order in which case, you need to reorder your layers. This can be easily done in the Timeline view or by using the Arrange commands from the Top Menu. You can also use the Ordering Layer Types in the Properties view.

- Ordering Layer in the Timeline View, on page 349
- Ordering Layers Using the Arrange Command, on page 350
- Ordering Layer Types, on page 350

### Ordering Layer in the Timeline View

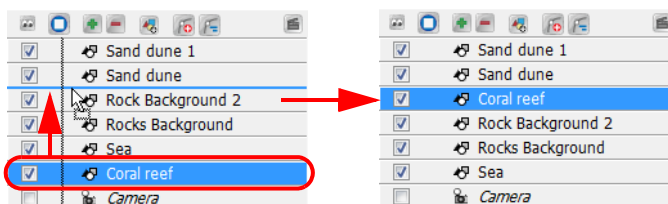
Ordering your layers in Toon Boom Studio is as easy as a drag and drop.

The order in the Timeline view will determine the way the layers appear in the Camera View.

- The layer on top of the Timeline view will appear in front of all the other elements in the Camera view.
- The layer on the bottom of the Timeline view will appear behind every other elements in the Camera view.

**To order layers in the Timeline view:**

1. In the Timeline view, select the layers to move.
2. Drag the selection to the new location and drop it in between the layers. Be careful not to drop your selection on a layer, this would create hierarchy.



## Ordering Layers Using the Arrange Command

You can also reorder the layers in your scene by using the **Arrange** menu command.

### To arrange the layers:

1. In the Timeline view, select the layer you wish to reorder.
2. Select **Arrange** > the desired option from the Timeline View menu. You can also select **Element > Arrange >** the desired option.:
  - ▶ **Bring to Front**  
Select this option if you want to bring your layer on top of the Timeline view order. This will display your element in front of everything else in the Camera view.
  - ▶ **Bring Forward**  
Select this option if you want to bring your layer one step higher in the Timeline view order. This will display your element on one level higher in the Camera view.
  - ▶ **Send to Back**  
Select this option if you want to send your layer to the bottom of the Timeline view order. This will display your element behind everything else in the Camera view.
  - ▶ **Send Backward**  
Select this option if you want to send your layer one step lower in the Timeline view order. This will display your element one level lower in the Camera view.

## Ordering Layer Types

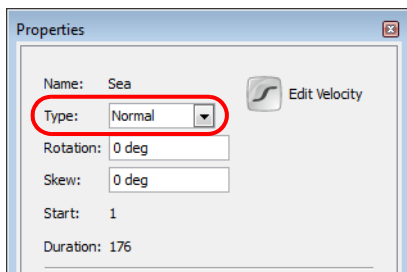
In the Properties view, you can also set a layer ordering type for your elements.

- **Background**  
Setting your layer as a Background type layer will automatically order this element behind all others in the Camera view. When it is set to Background, the Timeline ordering will have no effect on this layer.
- **Normal**  
By default all layers are set as a Normal type layer. A layer set to Normal type will be affected by their ordering level in the Timeline view.
- **Foreground**  
Setting your layer as a Foreground type layer will automatically order this element in front of all others in the Camera view. When it is set to Foreground, the Timeline ordering will have no effect on this layer.

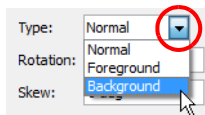
### To set the ordering layer type of an element:

1. In the Timeline or Camera view, select the element for which you wish to set the ordering type.

The selected layer parameters appear in the Properties view.



2. Click on the drop-down arrow button to open the Type menu and select the desired layer type for your element.



Your element will be ordered in the Camera view to fit the option you selected.



## Positioning the Scene Elements

In Toon Boom Studio it is easy to position your elements. You can do this either by using the sceneplanning Select




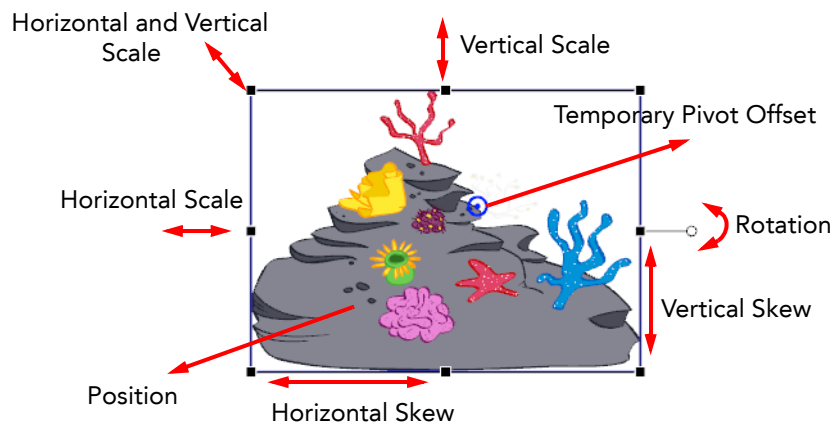
tool or the Properties view.

This topic is divided as follow:


- Positioning the Elements Using the Select Tool, on page 351
- Position the Elements Using the Properties View, on page 352
- Flipping Elements, on page 353
- Show Outline Selection, on page 353
- Locking Elements, on page 353

### Positioning the Elements Using the Select Tool

Use the Sceneplanning Select  tool to position, scale, rotate and skew your elements directly in the Camera view, without creating a keyframe.



**To use the Select tool:**

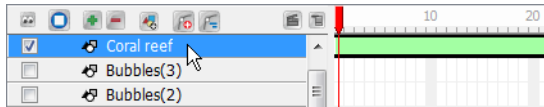
1. In the Sceneplanning Tools toolbar, click on the Select  tool. You can also access the Select tool by going to **Tools > Sceneplanning Tools > Select**. The default keyboard shortcut is [6].
2. In the Camera or Timeline view, select the element you wish to position.
3. Use one of the bounding box handles to position and transform your element.
  - ▶ Hold down the [Shift] key as you scale to keep the ratio when using the corner handles.
  - ▶ Hold down the [Shift] key as you rotate to lock the rotation every 15 degrees.

## Position the Elements Using the Properties View

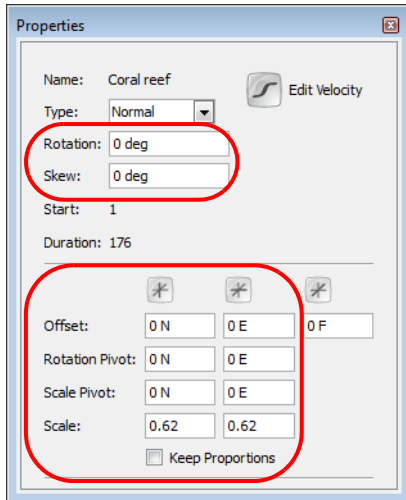
Use the Properties view to position, scale, rotate and skew your elements using exact values.

### To use the Properties view:

1. In the Timeline view, select the layer of the element you wish to position.



The layer is displayed in the Properties view.



2. In the Properties view, set the desired positioning values:
  - ▶ **Rotation**  
Enter a rotation angle value for the position of your element.
  - ▶ **Skew**  
Enter a skew angle value for the position of your element.
  - ▶ **Offset**  
Enter the South/North, East/West values for the position of your element.
  - ▶ **Rotation Pivot**  
Enter the South/North, East/West values for the position of the Rotation Pivot of your element. This is the central point to which your rotation angle will be calculated.
  - ▶ **Scale Pivot**  
Enter the South/North, East/West values for the position of the Scale Pivot of your element. This is the central point to which the scaling will be calculated.
  - ▶ **Scale**  
Enter the scaling value for the position of your element. 1 = 100%.
  - ▶ **Keep Proportions**  
Enable this option if you want to keep the proportions of your original element when scaling it down or up.



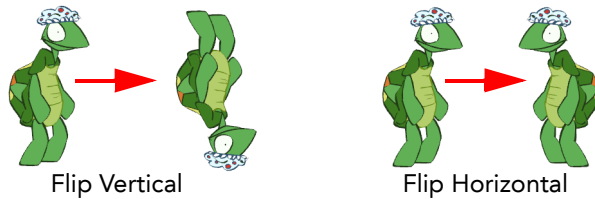
*You can change the type of unit to be displayed and used in the Properties view to inches or centimetres instead of the default Field values. Refer to the Preferences section to learn how to set the default unit type.*

## Flipping Elements

Sometimes you may need to flip a character element when you are positioning it. For example, if you want a face to look in the opposite direction. This can be easily done using the flipping command. This command produces a horizontal or vertical mirror image of your element. Using the flipping command eliminates any distortion you would have got if you had used the Sceneplanning tool to produce the mirror image instead.

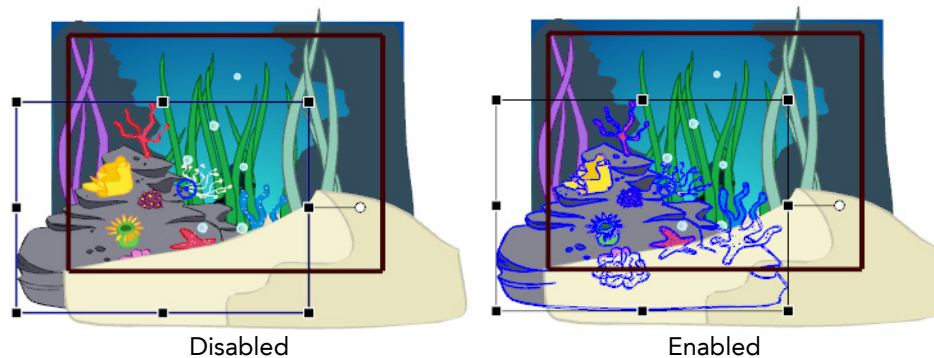
**To flip an element:**

1. In the Camera or Timeline view, select the element you need to flip.
2. Select **Element > Transform > Flip Horizontal** or **Flip Vertical**.



## Show Outline Selection

When you position many overlapping elements, use the Show Outline Selection option. This is very useful and once enabled it displays the outline of the selected element as blue lines that appear on top of everything else.



**To enable the Show Outline Selection option:**

1. Select **View > Show Outline Selection**.

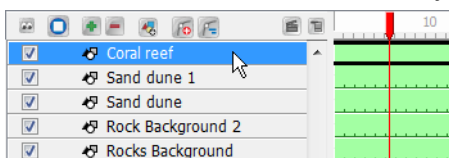
## Locking Elements

When you are positioning your elements in the Camera view you can lock the layers so that they will not move. Locking layers prevents them from being accidentally selected or moved.

### Locking and Unlocking a Layer

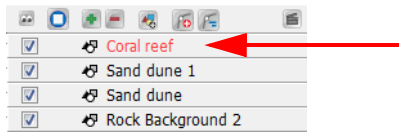
**To lock a layer:**

1. In the Timeline view, select the element you wish to lock.



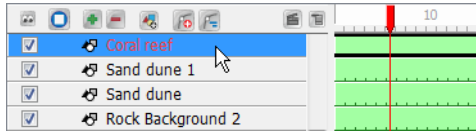
2. In the Timeline View Menu, select **Lock > Lock**.

The name of locked layers appears in red.



#### To unlock a layer:

1. In the Timeline view, select the locked element you wish to unlock.



2. In the Timeline View Menu, select **Lock > Unlock**.

## Locking and Unlocking All Layers

#### To lock all layers:

1. In the Timeline view, select any layer.
2. In the Timeline View menu, select **Lock > Lock All**.

Every layer in the Timeline view is locked.

#### To unlock all layers:

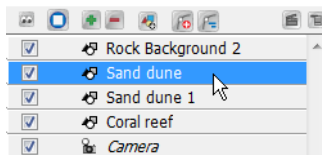
1. In the Timeline view, select any layer.
2. In the Timeline View menu, select **Lock > Unlock All**.

Every layer in the Timeline view is unlocked.

## Locking All Other Layers

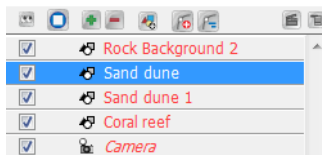
#### To lock all other layers:

1. In the Timeline view, select the element you wish to keep unlocked.

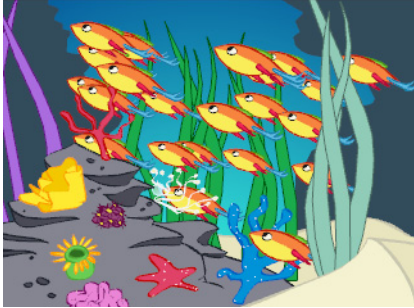


2. In the Timeline View menu, select **Lock > Lock All Others**.

Every layer, except the selected one is locked.

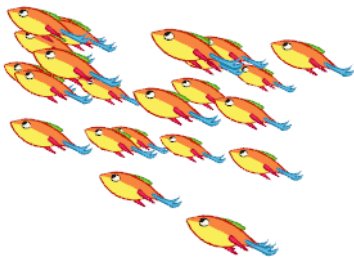


## Cloning and Duplicating Elements



It's easy to create crowd scenes or reuse animation in your scene by making use of the clone and duplicate options. The example we use here is the creation of a school of fish swimming in the sea.

### Cloning Layers

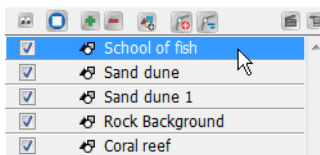


Cloning a layer provides you with a copy of the selected layer that uses the same drawings as the original. If you modify a drawing in the cloned or original layer it is updated in both layers. You can modify the layers' timing independently one from the other, but the drawings remain linked.

This feature is useful when you want to reuse an animation but have different timings.

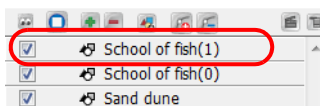
#### To clone a layer:

1. In the Timeline or Xsheet view, click on the layer you want to clone.

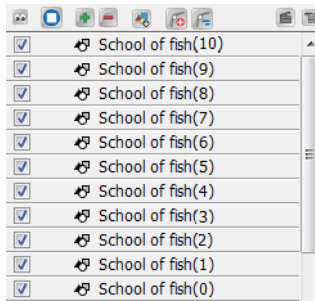


2. In the Timeline View menu, select **Clone Element**.

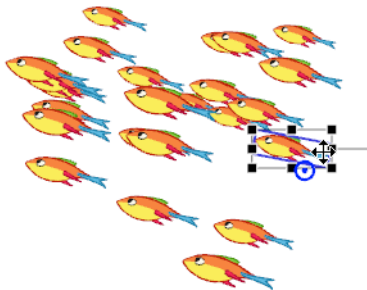
The cloned layer will appear in the Timeline view. In the Camera view, an identical element will appear at the same place as the original one.



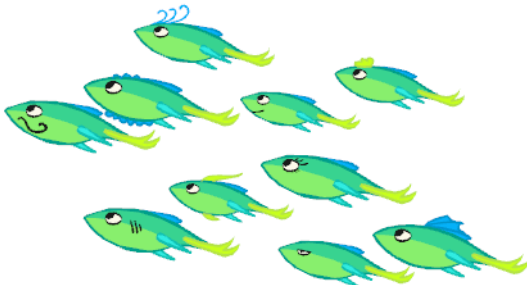
3. Repeat step 2 until you have all the cloned layers you need.



4. In the Camera view, you can reposition and transform your duplicated layers if you need by using the Sceneplanning Select tool. Refer to the Positioning the Scene Elements topic to learn more about the Sceneplanning Select tool.



## Duplicating Layers

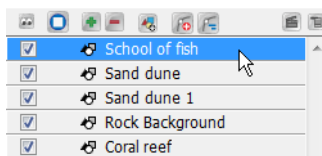


Duplicating a layer provides you with an independent copy of the drawings and their exposure. You can modify anything you want in the duplicated layer without affecting the original one.

You can use duplicated layers if, for example, you want to reuse an animation of a fish to create a school of fish but you still want to modify some of them to give them their own personality.

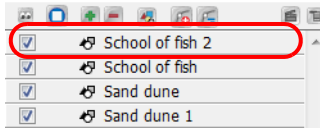
### To duplicate a layer:

1. In the Timeline view, click on the layer you want to duplicate.

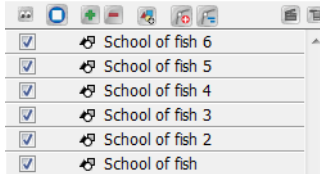



2. In the Timeline View menu, select **Duplicate Element**.

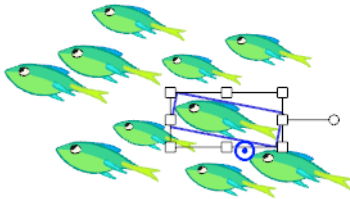
The duplicated layer will appear in the Timeline view. In the Camera view, an identical element will appear at the same exact emplacement as the original one.



3. Repeat step 2 until you have all the duplicated layers you need.



4. In the Camera view, you can reposition and transform your duplicated layers if you need by using the Sceneplanning Select  tool. Refer to the Positioning the Scene Elements topic to learn more about the Sceneplanning Select tool.



5. In the Drawing view, modify your drawings if need be. Refer to the Drawing and Design chapter to learn how to draw in Toon Boom Studio.



Refer to the *Creating a Motion Path* topic to learn how to use cloned or duplicated fish to create a school of fish swimming along a defined trajectory.

## Setting the Camera Frame

The scene action occurs inside the camera frame, so it is really important to set it up correctly.

- Adding a Camera Layer, on page 358
- Choosing the Active Camera Layer, on page 359
- Setting the Camera Frame Position, on page 359


## Adding a Camera Layer

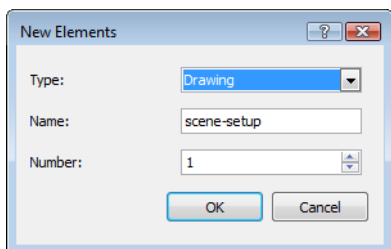
By default, Toon Boom Studio automatically add a camera to every new project your create, but you can also add your own camera layer if need be.



**NOTE:** Unlike any other additional Camera layers, the default Camera layer can not be deleted.

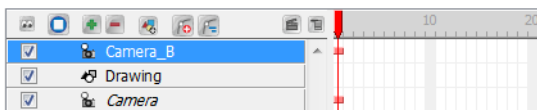
**To add a Camera layer from the Timeline view:**

1. In the Timeline view, click on the Add Element  button.
2. The **New Elements** dialog box opens.



- ▶ In the Type drop-down menu, select Camera.
- ▶ In the Name field, type in a name for your Camera layer. By default, the name of your Studio project appears in this field.
- ▶ In the Number field, type in the number of Camera layer you wish to add. You can also use the up and down arrow buttons to change the numbers.
- ▶ Click on the OK button.

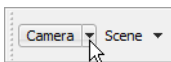
The new Camera layer appears in the Timeline view.



You can also use the Scene View toolbar to add a new Camera layer into your scene.

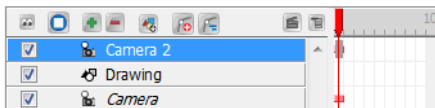
**To add a Camera layer from the Scene View toolbar:**

1. In the Scene View toolbar, click on the Camera drop-down menu button.



2. Select Add Camera from the drop-down menu.

A new Camera layer will appear in the Timeline view.



Refer to the *Discovering the Interface* chapter to learn how to customize your workspace and display the different toolbars.



## Choosing the Active Camera Layer

The Camera layer provided in your scene is the active camera by default. If you add several cameras to your scene and you want to have different settings on each, you can use the Scene View toolbar camera list to switch from one camera to another. You can use this feature if you are still working on your scene composition and you have different camera setups to choose from.

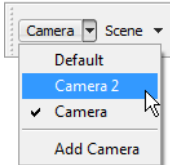
**To select an camera:**

1. In the Scene View toolbar, click on the Camera drop-down menu button.

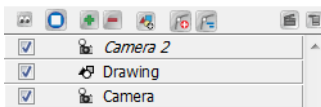


2. Select the desired Camera from the drop-down menu.

A checkmark identifies the current active camera in the list.




In the Timeline view, the active Camera layer is displayed in italics.



Refer to the *Discovering the Interface* chapter to learn how to customize your workspace and display the different toolbars.


## Setting the Camera Frame Position

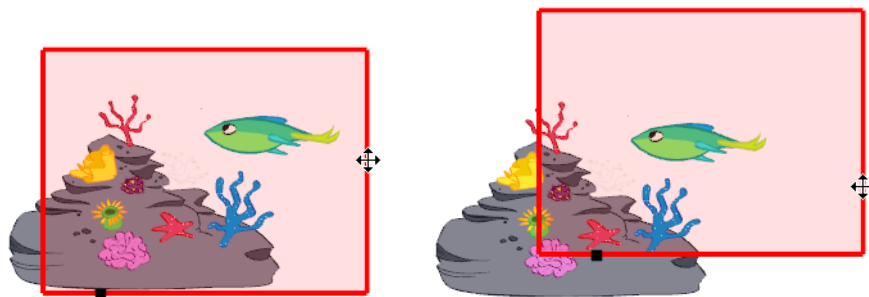
You can set the Camera Frame position by using the sceneplanning Select  tool or the Properties view.

### Setting the Frame Using the Select Tool

First, you can set the position of the camera frame.

**To set up the camera frame using the Select tool:**

1. In the Sceneplanning Tools toolbar, click on the Select  tool. You can also access the Select tool by going to **Tools > Sceneplanning Tools > Select**. The default keyboard shortcut is [6].
2. In the Camera or Timeline view, select the camera. Once it is selected, the frame will become red in the Camera view.
3. In the Camera view, grab the camera frame and drag to move it to the desired position.



As you position your camera, you might notice that the camera frame is moving slightly slower than your mouse cursor. This is due to the perspective effect because the Camera is not situated at the same depth level as the elements.

You can set your Active Camera to the Default Camera using the Scene View toolbar. This will enable a default camera frame in which you can position your Camera frame without experiencing the perspective illusion. Note that you can not move the default camera, it is only an indication of the default camera space.

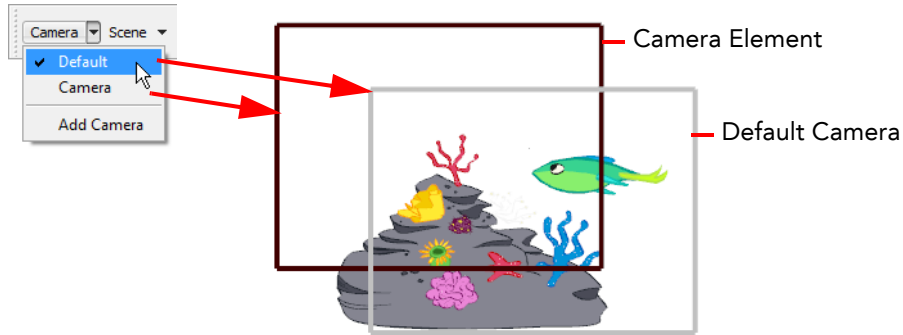
### To enable the Default camera:

1. In the Scene View toolbar, click on the Camera drop-down menu button.



2. Select Default from the drop-down menu.

A checkmark identifies the current active camera in the list and a grey camera frame appears in the Camera view.



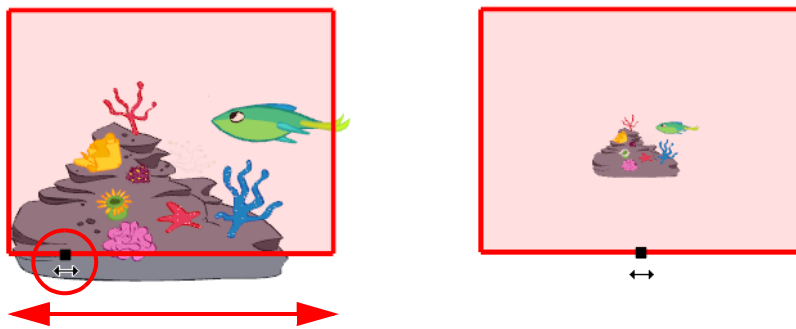
Refer to the *Discovering the Interface* chapter to learn how to customize your workspace and display the different toolbars.

You can also set the Field of View, which is also called the Zoom level of the camera frame.

**NOTE:** If the default camera is enabled, you can not set the Field of View angle with the Select tool.

### To set the Field of View angle using the Select tool:

1. In the Camera or Timeline view, select the camera. Once it is selected, the frame will become red in the Camera view.
2. In the Camera view, grab the FOV square situated on the bottom of the frame and drag it to change the zoom level.



## Setting the Frame Using the Properties View

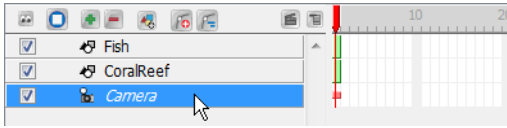
You can also set the camera position and field of view with exact values using the Properties view.



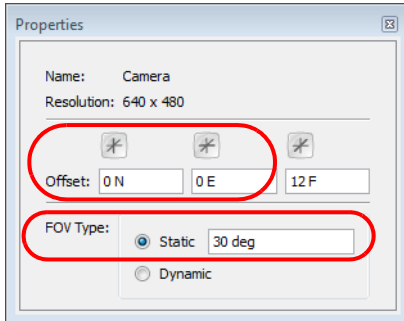
Refer to the *Discovering the Interface* chapter to learn how to customize your workspace and display the different toolbars.

**To use the Properties view:**

1. In the Camera or Timeline view, select your Camera.



The Camera information will be displayed in the Properties view.



2. In the Properties view, set the desired positioning values:

- ▶ **Offset**

Type in the North/South and East/West position values.

- ▶ **FOV Type**

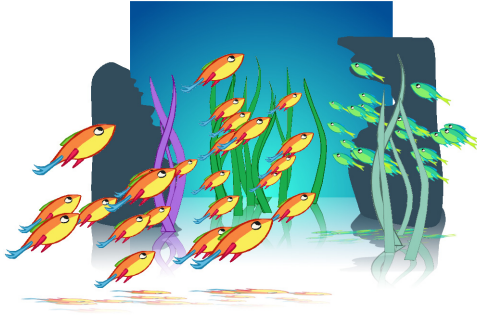
**Static Field:** By default the Static Field of View type is enabled, this means that the zoom value will not be animated, it will stay the same throughout the scene. Type in the desired Field of View angle value.

**Dynamic:** Enable this option to animate the zooming value over time. Refer to *Animating the Camera* topic to learn more about animating the Field of View.



You can change the type of unit to be displayed and used in the Properties view to inches or centimetres instead of the default Field values. Refer to the *Preferences* section to learn how to set the default unit type.

## Creating a Multiplane



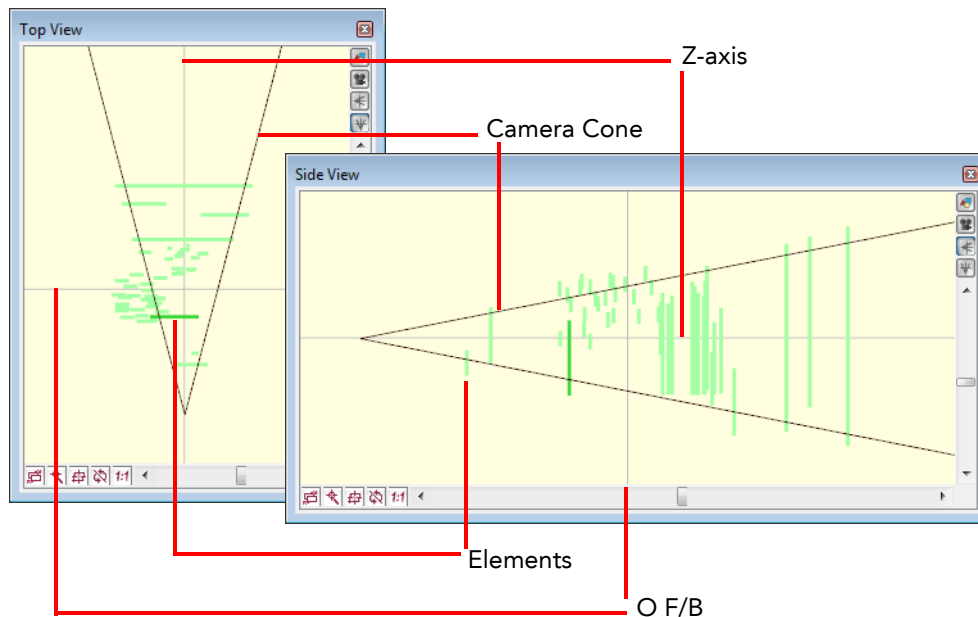
One of the exciting features in Toon Boom Studio is the Multiplane. In the Multiplane you can create backgrounds in several layers and spread them in depth along the Z-axis. This way you add depth to your project, and when you move the camera through this environment, it creates an impressive perspective illusion.

### Distributing the Elements on the Z-axis


When it is time to position elements along the Z-axis you can do it via the Top, Side, Camera or Properties view

- Top and Side Views, on page 362
- Camera View, on page 364
- Properties View, on page 365



#### Top and Side Views

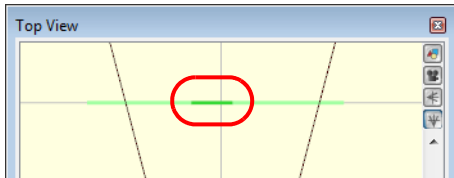


The Top and Side views are representations of your scene's space viewed from the top and side.

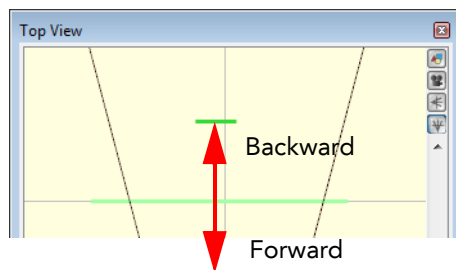
When you move your element along the Z-axis, you will notice that it seems they are getting smaller or larger. This is because of the perspective effect, the elements that are closer to the camera appear larger and the elements that are far away, appear smaller. Because of this, once they are positioned you might need to resize your elements using the Sceneplanning Select  tool.

**To position elements in the Top view:**

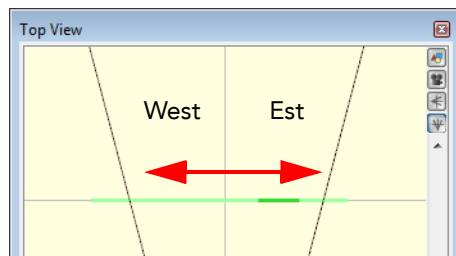
- In the Sceneplanning Tools toolbar, select the proper tool:
  - ▶ Select the Sceneplanning Select  tool if you want to set the static position of your element. The element will be positioned without creating a keyframe.
  - ▶ Select the Transform  tool if you want to animate the element along the Z-axis, this will create a keyframe.
- In the Timeline or Camera view, select the elements you want to reorder.  
In the Top view, the selected element is represented by a darker green line.



- In the Top view, grab your element and drag it to a new position:
  - ▶ A vertical drag will position it along the Z-axis, (Forward or Backward).





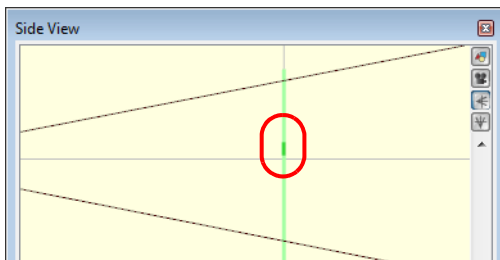
- ▶ An horizontal drag will position it on the X-axis (East or West).



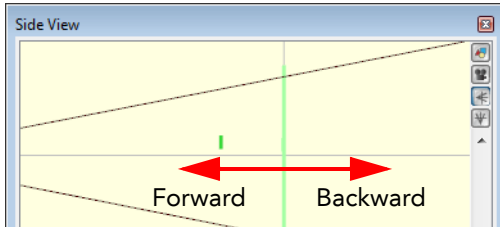
As you position your elements in the Top view, you can see the position update simultaneously in the Camera view.

**To position elements in the Side view:**

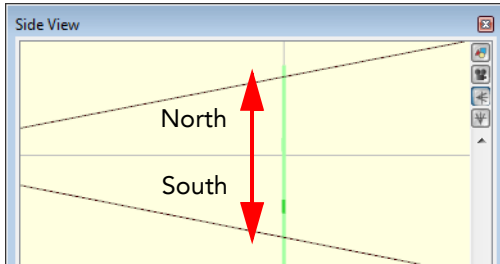
- In the Sceneplanning Tools toolbar, select the proper tool:
  - ▶ Select the Sceneplanning Select  tool if you want to set the static position of your element. The element will be positioned without creating a keyframe.
  - ▶ Select the Transform  tool if you want to animate the element along the Z-axis, this will create a keyframe.
- In the Timeline or Camera view, select the element you want to reorder.  
In the Side view, the selected element is represented by a darker green line.



3. In the Side view, grab your element and drag it to a new position:
  - ▶ A vertical drag will position it along the Y-axis, (North or South).



- ▶ An horizontal drag will position it on the Y-axis (North or South).





As you position your elements in the Side view, you can see the position updating simultaneously in the Camera view.

## Camera View

You can order your elements along the Z-axis directly in the Camera view.

### To distribute elements in the Camera view:

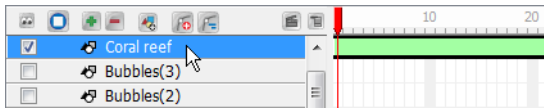
1. In the Sceneplanning Tools toolbar, select the proper tool:
  - ▶ Select the sceneplanning Select  tool if you want to set the static position of your element. The element will be positioned without creating a keyframe.
  - ▶ Select the Transform  tool if you want to animate the element along the Z-axis, this will create a keyframe.
2. In the Camera view, select the element you want, then to reorder it press and hold the [Alt] key.
3. Next, press the [Up] arrow key to nudge the element backward or the [Down] arrow key to nudge the element forward. As you send your element backward or forward, you can see the result in the Top or Side view.

## Properties View

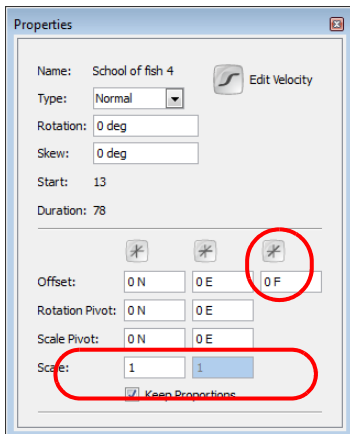
You can use the Properties view to order your elements along the Z-axis using accurate Forward, Backward values.

**To order elements using the Properties view:**

1. In the Timeline view, select the layer of the element you wish to order.



The layer will be displayed in the Properties view.



2. In the Properties view, set the desired values:
  - In the F/B Offset field (Forward/Backward), type in the desired value for the Z-axis Forward/Backward position.
  - In the Scale fields, type in the desired value to resize your element following the Forward/Backward position of your element.
  - Enable the Keep Proportions option to lock the ratio to resize the element proportionally.



You can change the type of unit to be displayed and used in the Properties view for inches or centimetres instead of the default Field values. Refer to the Preferences section to learn how to set the default unit type.

## Creating a Motion Path



Another step in the scene setup task is to create motion path when needed. Once you set up your space and your camera frame, you can connect your elements to a peg to animate them on a trajectory.

In this topic you will learn about the following:

- Pegs, on page 366
- Motion Path, on page 370

### Pegs

When creating a motion path for your element you need to add Peg layers in your scene and parent your elements to them.


This topic includes the following:

- Adding a Peg, on page 366
- Adding a Parent Peg, on page 367
- Parenting Elements to a Peg, on page 367
- Expanding and Collapsing Layers, on page 368
- Peg Only Mode, on page 368
- Peg Toolbar, on page 369

### Adding a Peg

A Peg layer is a trajectory that contains no drawing, onto which you can hook your drawings.

**To add a Peg:**

1. In the Timeline View toolbar, click on the Add Peg Element  button. You can also select **Element > Add > Peg**.

The Peg layer will appear in the Timeline view, on top of the selected element.

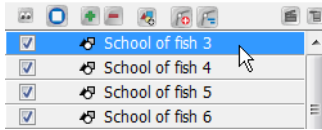



## Adding a Parent Peg

Adding a Parent Peg will automatically parent the new peg with the selected element as it is created.

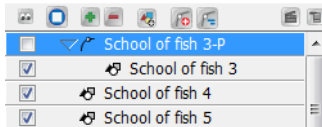
### To add a Parent Peg:

1. In the Timeline view, select the element you want to parent to a peg.



2. In the Timeline View toolbar, click on the Add Parent Peg Element  button. You can also select **Element > Add > Parent Peg**.

The Parent Peg layer will appear in the Timeline view with the selected element already connected to it.



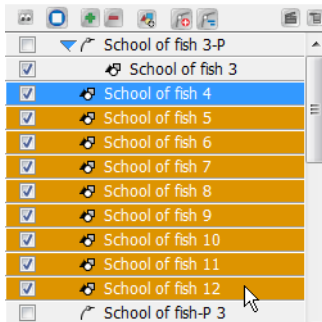
## Parenting Elements to a Peg

If you want to connect an element to an already existing peg or if you need to connect several layers to a peg at once here is how you can do it.

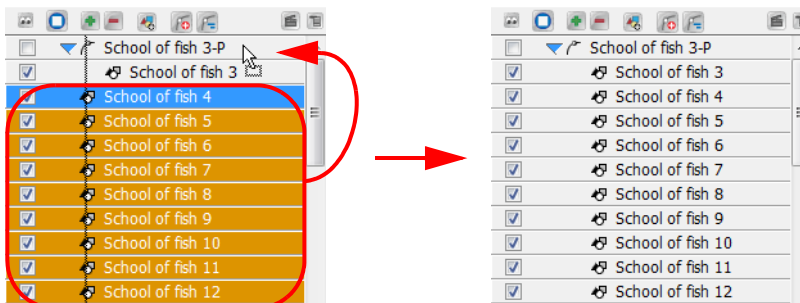
If we come back to our school of fish example in the Cloning and Duplicating Elements topic, in order to make them swim together as a team, we will need to parent them all to the same peg.

### To parent elements to a peg:

1. In the Timeline view, select the elements you want to connect to a peg. You can make a multiple selection with [Shift]+click.



2. Click and drag your selection on the desired peg.



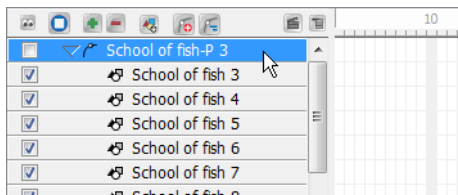
You can also use the *Attach to Next Object* and *Detach from Parent* commands to connect and disconnect elements from a peg or from one another. Refer to the *Other Options* topic to learn more about these.

## Expanding and Collapsing Layers

To simplify the look of your Timeline view, you can collapse and expand your layers. If some layers are parented to other ones, you can collapse the parent layer to hide all of its children.

**To collapse a layer selection in the Timeline view:**

1. In the Timeline view, select the layers to collapse.

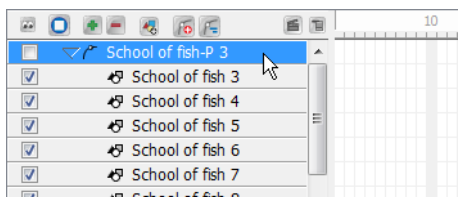


2. Select **Arrange > Collapse/Expand** from the Timeline View menu. You can also click on the Expand Children Arrow located on the parent layer.



**To expand a layer selection in the Timeline view:**

1. In the Timeline view, select the layers to expand.



2. Select **Arrange > Collapse/Expand** from the Timeline View menu. You can also click on the Expand Children Arrow located on the parent layer.



## Peg Only Mode

Once you start to add Peg elements in your scene you can change the selection mode in the Camera view so that you can only select pegs. This can be useful when you are working on your motion paths and you want to prevent the selection of elements in the Camera view.

**To enable Peg Only Mode:**


- Select **Tools > Turn On Peg-Only Mode**. The default keyboard shortcut is [M].

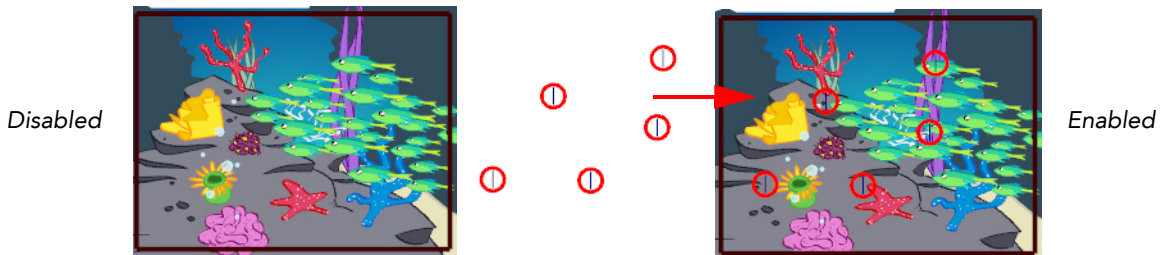
**To disable Peg Only Mode:**


- Select **Tools > Turn Off Peg-Only Mode**. The default keyboard shortcut is [M].

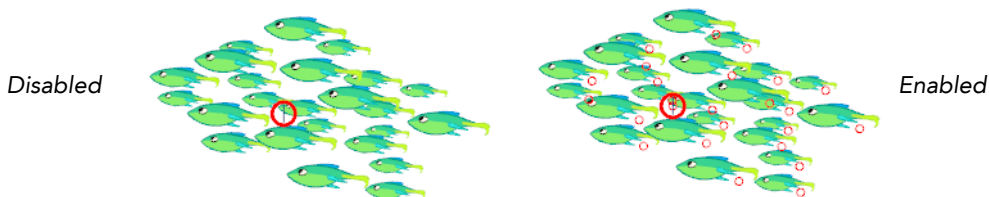
## Peg Toolbar


The Peg Toolbar provides useful peg display options.

- 
**Show All Pegs**  
 Enable or disable this option to display or hide all the pegs of your scene. If you have hidden pegs, you can show them without changing their show/hide status in the element list in the Timeline window. You can also select **View > Pegs > Show All Pegs**.




- 
**Show Peg Ghosts**  
 When you are creating motion paths, elements linked to a Peg element 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 to see the path that an element linked to a peg will follow. You can also select **View > Pegs > Show Peg Ghosts**.



- 
**Show Pivot Path**  
 When you animated a peg pivot, you can display the resulting path in the Camera view. You can also select **View > Pegs > Show Pivot Path**.

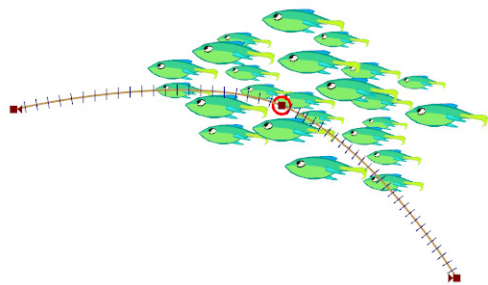


Refer to the [Function Editor View](#) topic to learn how to animate a peg pivot.

- 
**Show Element Arms**  
 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. You can also select **View > Pegs > Show Element Arms**.



## Motion Path





Once you have hooked your elements to a peg, you can start adding keyframes to create a motion path. This way you can make an animation, such as an on-the-spot walk cycle or swimming cycle cross the screen.

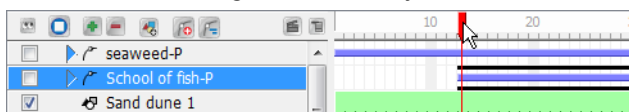
This topic includes the following:

- Creating a Basic Motion Path, on page 370
- Displaying and Hiding a Motion Path, on page 371
- Adding and Controlling Motion Points, on page 372
- Switching Between Keyframe and Control Point
- Adjusting the Tension, Bias and Continuity, on page 375
- Previous and Next Control Point, on page 377
- Orient to Path, on page 377
- Constant Z, on page 378
- Snap Last Keyframe, on page 378

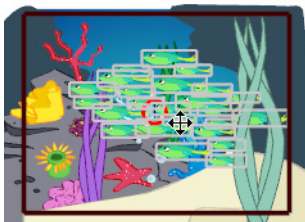
### Creating a Basic Motion Path

To create a basic motion path:

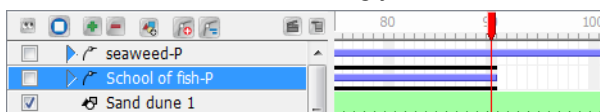
1. In the Sceneplanning Tools toolbar, select the Motion  tool. It is also possible to create your motion path with the Transform  tool.
2. Select **Tools > Turn On Peg-Only Mode** to turn on the Peg-only mode, this will limit selection in the Camera view to pegs only. The default keyboard is [M].
3. In the Timeline view, go to the frame you want the motion path to start at.



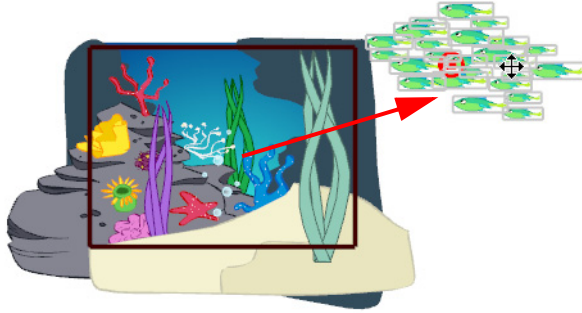
4. In the Camera view, select the elements that you want to follow a motion path. Their parent peg will automatically be selected because of the Peg-only mode.



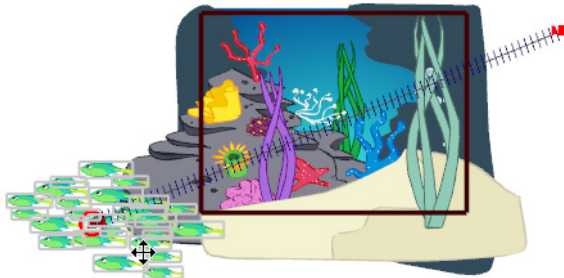
5. In the Camera view, click and drag your selection to the first position of the motion path trajectory.



A keyframe will automatically be created in the Timeline view. This keyframe will also be displayed in the Camera, Top and Side views as a red square with an arrow.



6. In the Timeline view, go to the last frame of your trajectory.
  7. In the Camera view, drag your selection to the last position of the motion path trajectory.
- The trajectory will appear in the Camera view and the new keyframe will be created in the Timeline view.



When you create a motion path with non-constant segments, you will see a series of tick marks that represent the position of the element for each frame.

A basic motion path has been created and your animation should now follow the trajectory you created. In this example, the fish will swim across the screen in a straight line.

You can also modify the velocity of the motion path using the Function Editor view.



*Refer to the [Function Editor View](#) topic to learn more about velocity.*



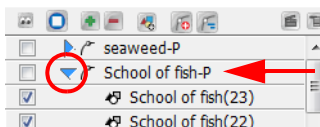
*You can set your preferences so that when you create a motion path, a default velocity is automatically applied. Refer to the [Preferences](#) topic to learn how to set your preferences.*

## Displaying and Hiding a Motion Path

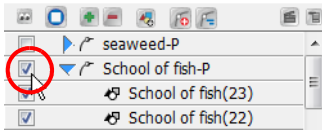
By default, when you select a peg, its motion path is automatically displayed in the Camera view but as soon as you select an element that is not related to this peg, the motion path is hidden. You can enable the peg layer to allow the motion path to be displayed at anytime in the Camera view, even when it is not selected.

**To display a motion path:**

1. In the Timeline view, click on the peg layer arrow button to expand it.



- In the Timeline view, enable the peg layer.



The motion path will now be displayed in the Camera view even when the peg is not selected.




*It is important that the peg layer is NOT collapsed when enabling or disabling it or else all of the parented layers would also be enabled and disabled at the same time.*

## Adding and Controlling Motion Points

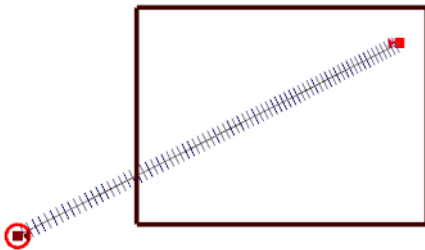
If you want to create a motion path that is not straight, you must add motion points to the trajectory. Motion points can be either keyframes or control points. Keyframes are locked to a specific frame and control points are not locked.

- Add keyframes when you want your element to reach a specific position on a specific frame number. A keyframe is displayed as a red square.
- Add control points when you want your element to reach a specific position, but not at a specific frame number. A control point is displayed as a green circle.

With the Motion  tool, you can modify motion paths by adding and moving keyframes on the peg.

When used simultaneously, the Camera, Top and Side views allow you to create motion paths that go from East to West, North to South, or Front to Back.

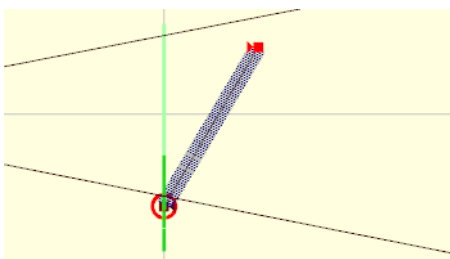
- In the Camera view, you can control the east, west, north and south positions of the motion path.




- In the Top view, you can control the forward, backward, east and west positions of the motion path.



- In the Side view, you can control the forward, backward, north and south positions of the motion path.

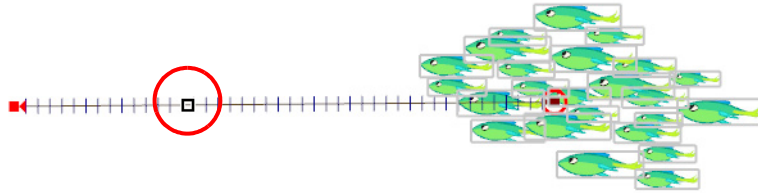


### To add motion point:

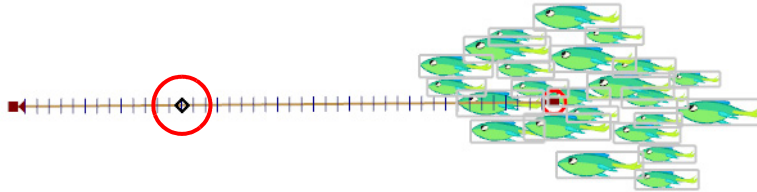
- In the Sceneplanning Tools toolbar, select the Motion  tool.
- In the Timeline view, select the peg layer.

The motion path trajectory will appear in the Camera, Top and Side views.

3. In the Camera, Top or Side view, place the pointer over the trajectory while holding one of these two keys:
  - ▶ [Alt]  
Hold the [Alt] key if you want to add a keyframe. The pointer will change to a black square.

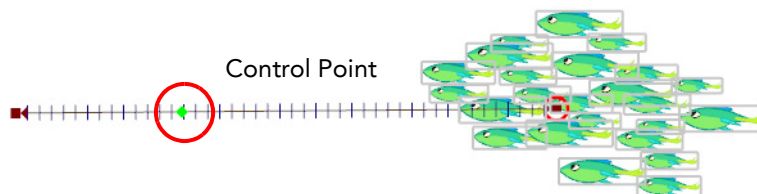
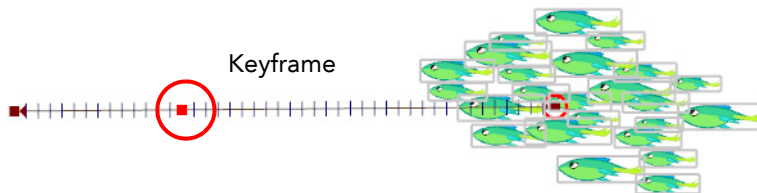


- ▶ [Shift]  
Hold the [Shift] key if you want to add a control point. The pointer will change to a black diamond.

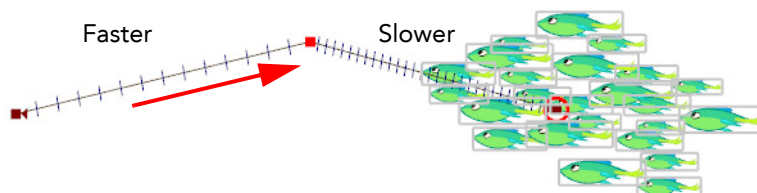


4. In the Camera, Top or Side view, place the black square where you want your motion point to be added and click the mouse.

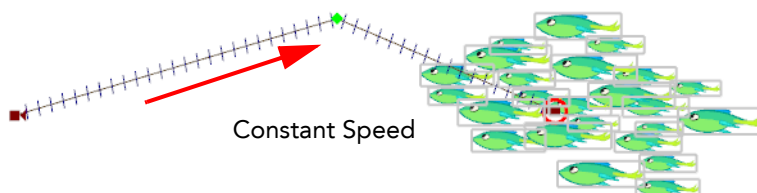
A keyframe or a control point will be added exactly at that place.



5. In the Camera view, click and drag the new control points to control the motion path.
  - ▶ The keyframe is locked to a specific frame. Repositioning the new keyframe along the path will modify the speed of the two segments.





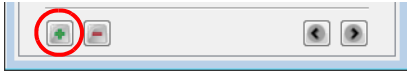
- ▶ The control point is not locked to a specific frame. Repositioning the new control point will not affect the speed of the two segments, it will remain constant throughout the motion path.



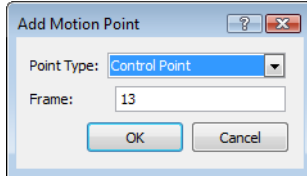
6. To delete a control point, select it on the motion path and press [Del].

**To add and remove control points from the Properties view:**

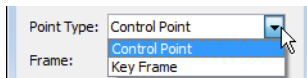
1. In the Sceneplanning Tools toolbar, select the Motion  tool.
2. In the Timeline view, select the motion path peg to display it in the Camera view.
3. In the Camera view, select one of the control points on your motion path. The control point properties are displayed in the Properties view.
4. In the bottom of the properties view, click on the Add  button.



The Add Motion Point dialog box opens.



5. Use the Point Type drop down menu to select between Control Point and Keyframe.



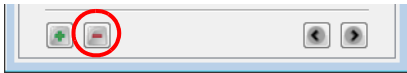
6. In the Frame field, enter the frame number where you want the new motion point to be added.



7. Click on the OK button.

The new motion point will be added to your motion path.

8. To delete a selected motion point using the Properties view, click on the Delete button.



You can also modify the velocity between the different control points using the Function Editor view.




*Refer to the Function Editor View topic to learn more about velocity.*



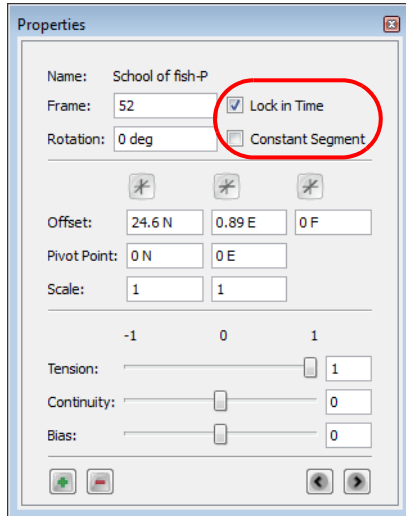
## Switching Between Keyframe and Control Point

You can easily switch from a keyframe to a control point or the opposite using the Properties view.

**To switch between keyframe and control point using the Properties view:**

1. In the Sceneplanning Tools toolbar, select the Motion  tool.
2. In the Timeline view, select the motion path peg to display it in the Camera view.
3. In the Camera view, select one of the control points on your motion path.

The control point properties are displayed in the Properties view.



4. Enable or disable the Lock in Time option:
  - ▶ If you selected a control point, the Lock in Time option is disabled. Enable it to turn your control point into a keyframe.
  - ▶ If you selected a keyframe, the Lock in Time option is enabled. Disable it to turn your keyframe into a control point.
5. You can also enable or disable the Constant Segment option:
  - ▶ By default, the Constant Segment is disabled because Toon Boom Studio automatically creates non-constant segments between keyframes. Enable it to turn your segment to a constant segment.
  - ▶ If the motion point you selected precedes a constant segment, the option will be enabled. Disable it to change your segment to a non-constant segment.

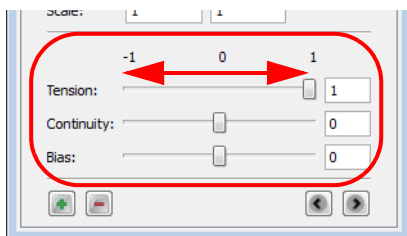



Refer to the *Animating a Puppet* chapter to learn more about keyframes and constant vs. non-constant segments.

## Adjusting the Tension, Bias and Continuity

You can use the Tool Properties view to edit keyframes and control point parameters such as position, continuity, bias, tension and lock in time.

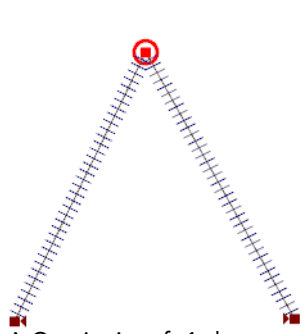
Each time a Keyframe or a Control Point is selected in the Camera, Top or Side view, its parameters appear in the Properties view.



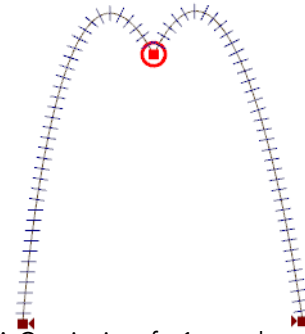
You can adjust these parameters on existing Control Points and Keyframes by selecting the point in the Camera View with the Motion  tool and using the Continuity, Tension and Bias sliders in the Properties view.

- **Continuity**

This controls the smoothness of a transition between the segments joined by a point.



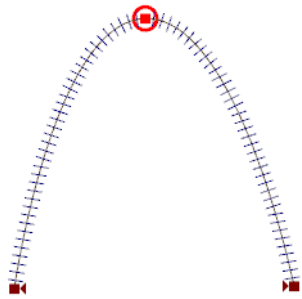
A Continuity of -1 sharpens the transition on either side of the control point.



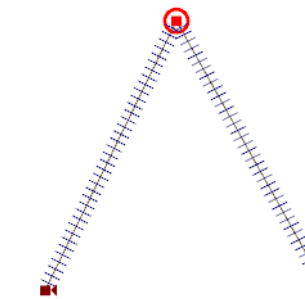
A Continuity of +1 rounds out the transition, creating gentle curves on either side of the control point.

- **Tension**

This controls how sharply the path bends as it passes through a control point or keyframe.



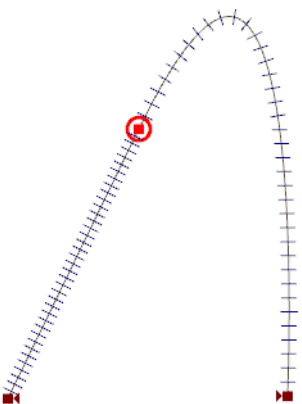
A Tension of -1 increases the curve on either side of the control point.



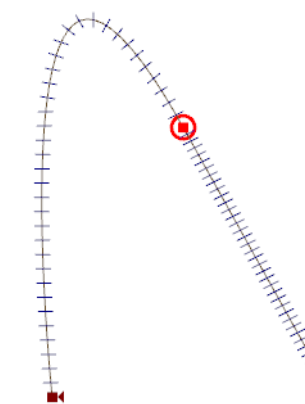
A Tension of +1 sharpens the curve on either side of the control point.

- **Bias**

This controls the path slope so that it flows towards one side of the motion point or the other.



A Bias of -1 favours the right side of the control point.



A Bias of +1 favours the left side of the control point.




You can customize the default Tension, Continuity and Bias values in your preferences. Refer to the Preferences topic to learn how to set your preferences.


## Previous and Next Control Point

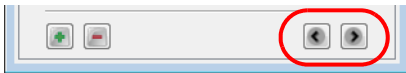
In Toon Boom Studio, there are shortcuts and options available for navigating between control points on a motion path.

**To navigate between control points using shortcuts and menu option:**

1. In the Sceneplanning Tools toolbar, select the Motion  tool.
2. In the Timeline view, select the motion path peg to display it in the Camera view.
3. In the Camera view, select one of the control points on your motion path.
  - ▶ To go to the previous control point, select **Element > Arrange > Previous Control Point**. You can also use [,] the default keyboard shortcut in the Camera view.
  - ▶ To go to the next control point, select **Element > Arrange > Next Control Point**. You can also use [.] the default keyboard shortcut in the Camera view.

**To navigate between control points using the Properties view:**

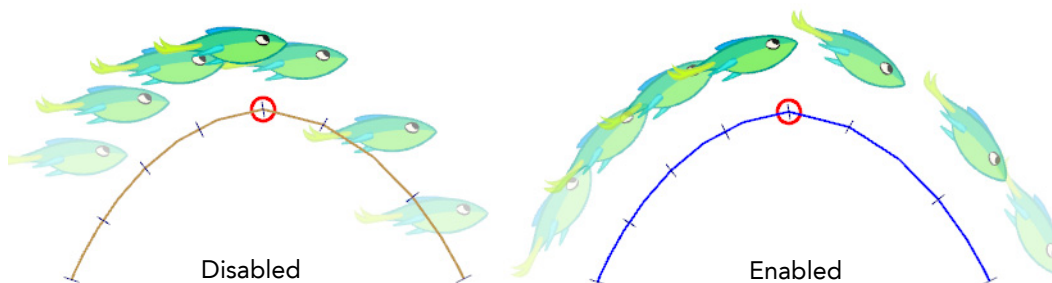
1. In the Sceneplanning Tools toolbar, select the Motion  tool.
2. In the Timeline view, select the motion path peg to display it in the Camera view.
3. In the Camera view, select one of the control points on your motion path.  
The control point properties are displayed in the Properties view.
4. In the bottom of the Properties view, click on the Previous and Next buttons to navigate through the control points.



## Orient to Path

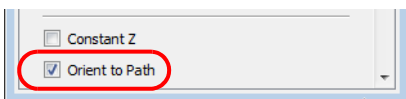
Toon Boom Studio has an option which forces the element connected to the path to follow the motion path. The Orient to Path option is available in the Peg layer Properties view.

In this example, the default setting shows the fish keeping its original orientation throughout the motion path. However, when the Orient to Path option is enabled, the fish follows the motion path. You could use this option if you wanted to make the fish leap out of the water and back in again.



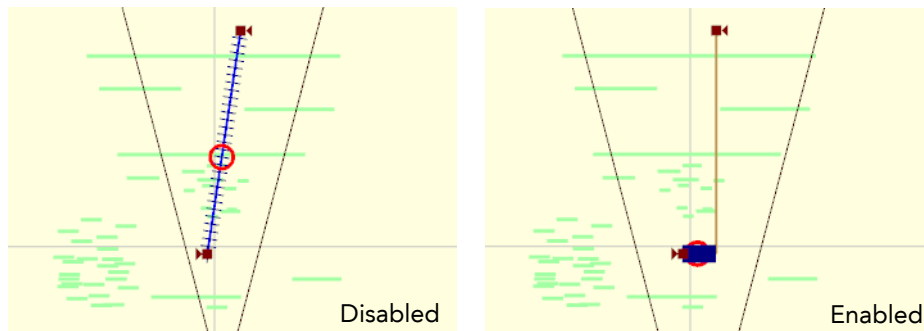
**To enable the Orient to Path option:**

1. In the Timeline view, select the parent peg of the element you wish to follow the motion path.  
The properties of the selected peg will be displayed in the Properties view.
2. In the Properties view, enable the Orient to Path check box.



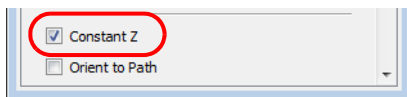
## Constant Z

In the Properties view of a peg layer, you have the Constant Z option. This option is disabled by default, which means that when you create a motion path along the Z-axis, the automatic interpolation calculates the X, Y and Z axis values. When it is enabled, the interpolation calculates the X and Y axis values and will keep the Z-axis value as constant.



**To enable the Constant Z option:**

1. In the Timeline view, select the peg you want to enable the constant Z option for. The properties of the selected peg will appear in the Properties view.
2. In the Properties view, enable the Constant Z check box.



## Snap Last Keyframe

The Snap Last Keyframe command forces the last keyframe and the keyframe before it to retain the same position values.

**To enable the Snap Last Keyframe option:**

1. Select **Tools > Snap Last Keyframe**.

## Animating the Camera

In Toon Boom Studio you can connect a peg to your Camera and create a camera move in much the same way that you can animate motion paths for your elements. This means that you can animate the camera visually in the Camera, Top and Side views, with the function curve, or by typing values in the Properties view.

Scenes are not only composed of characters moving around in a static camera field, they are also composed of camera movements. Although it is not always something that we think about, often it is the exact opposite, the character is static while the camera moves through elements on the stage. Camera pans, jumps, cuts and zooms are as important to storytelling as the story itself.


Toon Boom Studio has a camera that can move along the X, Y and Z axes. Having the camera move on the Z-axis allows you to create truck in and truck out, as well as multiplane camera moves.

This topic is divided as follow:

- Adding a Peg to Your Camera, on page 379
- Making a Basic Camera Move, on page 379

### Adding a Peg to Your Camera

To add a parent peg to your camera:


1. In the Timeline view, select the Camera layer.
2. In the Timeline view, click on the Add Parent Peg  button.

A Peg layer appears directly above the Camera layer so that the Camera layer is automatically attached to it. The Peg layer automatically takes on the name of the camera and adds the suffix **-P** to indicate that it is a peg layer, for example **Camera-P**.

### Making a Basic Camera Move

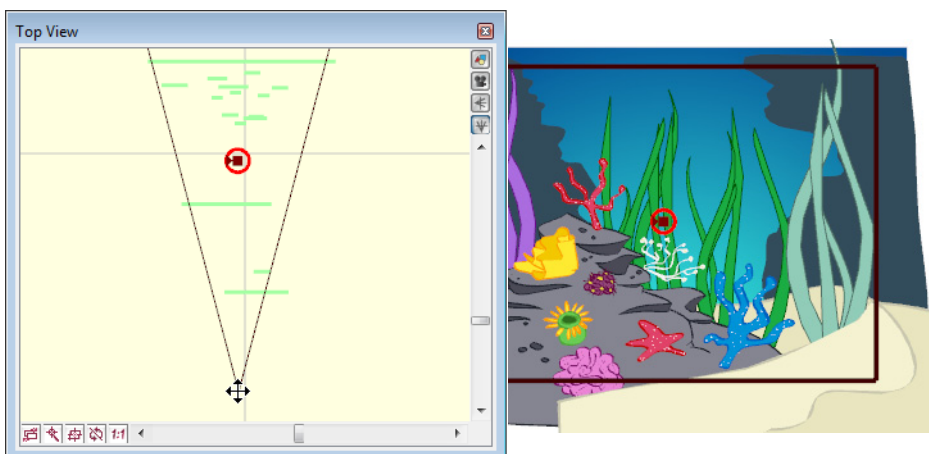
Once you added a peg to your Camera, you are now ready to animate your camera.

To animate your camera:

1. In the Sceneplanning Tools toolbar, select the Motion  tool.
2. In the Timeline view, select the camera peg layer on the first frame of the scene.



3. In the Top view, select the camera and move it to the desired position. You can refer back to the Camera view to see how this camera moves the frames in your scene.



4. In the Timeline view, click on a cell in the Camera Peg layer where you would like the camera move to begin.

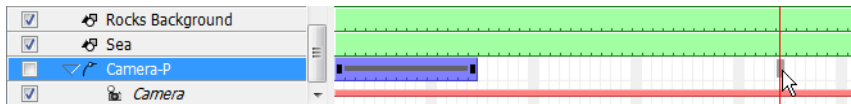


- Right-click (Windows) or [Ctrl]+click (Mac OS X) and select Add Keyframe from the menu that appears. You can also use [I], the default keyboard shortcut.

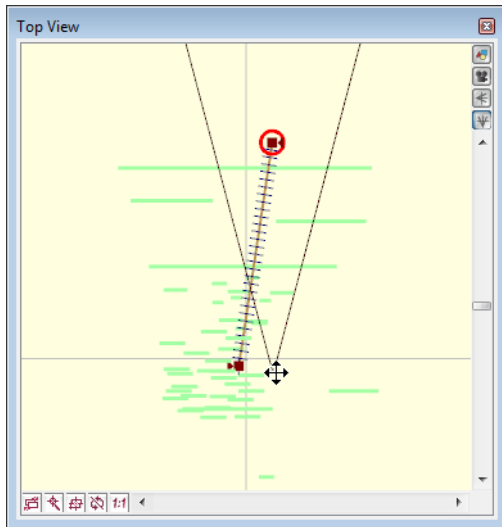
A keyframe now appears in that cell. Any frames preceding this keyframe cell will hold the same camera position as in this keyframe.



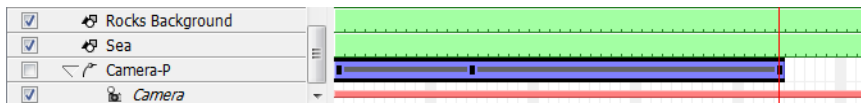
- Click on another cell where you would like the camera move to end.




- In the Top view, select the camera and move it to the desired position.



A second keyframe appears and a line is created between the two frames to indicate that Toon Boom Studio created a non-constant segment, meaning that it will automatically interpolate the movement.



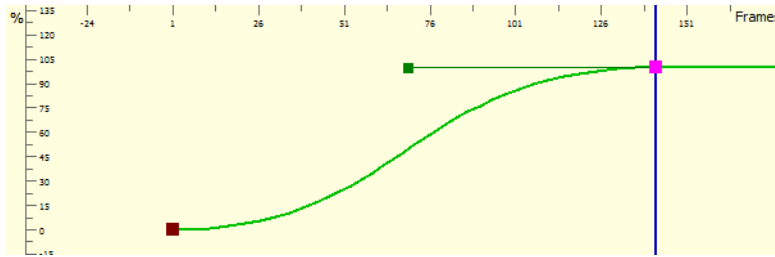
 To learn more about the Camera positioning tools, refer to the *Setting the Camera Frame* topic. To learn more about animating with a Peg, refer to the *Creating a Motion Path* topic.

## Function Editor View

The graph in the Function Editor View displays the motion over the first and last keyframes set in the scene, as well as any motion points created in between.

**NOTE:** If the scene is 60 frames, but the motion path ends at frame 40, then the editor will only display up to frame 40.

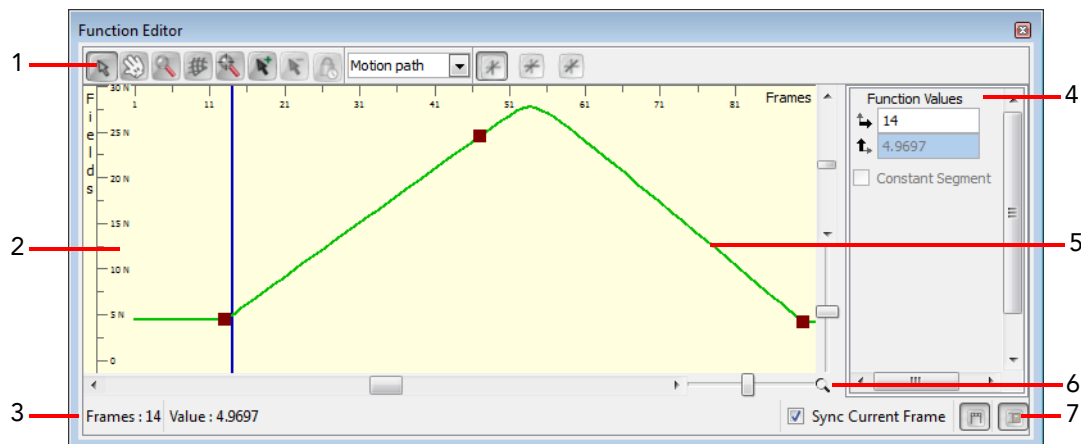
You can use the Function Editor View to create and edit motion paths and movements as well as edit velocity.



This topic is divided as follows:




- Function Editor View - Overview, on page 381
- Adjusting the Velocity, on page 383
- Adding and Deleting Motion Points in the Function Editor View, on page 385
- Changing the Values of a Motion Point, on page 387

## Function Editor View - Overview



### 1. Function Editor View toolbar:

- **Select:** Use this to manipulate the motion point and velocity Bezier handles.
- **Grabber:** Use this tool to pan in the Function Editor View.
- **Zoom:** Use this tool to zoom in and zoom out (hold [Alt]) in the Function Editor View.
- **Show Grid:** Shows or hides the grid.
- **Reset:** Resets the pan and zoom in the Function Editor View.
- **Add Keyframe:** Use this tool to add a keyframe on the curve.
- **Remove Keyframe:** Use this tool to delete a keyframe on the curve.
- **Lock In Time:** Use this option to toggle the selected motion point between a keyframe or a control point.
- **Function Drop-down menu:** Choose the function you want to display and edit from this drop-down menu.

-  **North/South:** Click on this button to display the North/South values in the Fields scale of the graph.
-  **East/West:** Click on this button to display the East/West values in the Fields scale of the graph.
-  **Forward/Backward:** Click on this button to display the Forward/Backward values in the Fields scale of the graph.

## 2. Graph

The graph area displays a Fields scale vertically on the left, a Frame scale on the top and the selected function curves and motion points.

## 3. Function Editor View Status Bar

This displays the values, frame and fields, for the currently selected motion point.

## 4. Editing Panel

The Editing Panel is contextual, the fields displayed there are relative to the type of function you selected in the function drop-down menu. Enter specific values in these fields to edit the motion points on the curve.

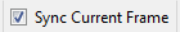


## 5. Function Curve

The function curve displays the selected movement of a peg as an editable curve with visible motion points.

## 6. Frames and Fields Scales Zoom

Use these sliders to increase or decrease the spacing between each value on the Frames or Fields scale.

## 7. Function Editor View bottom toolbar:

-  **Sync Current Frame:** When this option is enabled, when you select frames in the Function Editor view, the entire scene's views (Camera, Timeline, etc) will be in-sync and follow. When this option is disabled and you select frames in the Function Editor view, the other scene views stay at the current frame.
-  **Show/Hide toolbars:** Click on this button to show or hide the Function Editor View toolbar.
-  **Show/Hide Editing Panel:** Click on this button to show or hide the Editing Panel.



## Adjusting the Velocity

The velocity, or ease-in ease-out, is used on non-constant segments to give a more natural feeling to the movement.




Ease-in and ease-out is the acceleration and deceleration of the movement. The speed of the motion is adjusted between two keyframes so that the movement will start slowly, speed up and then slow down again as it reaches the second keyframe. Adjusting the velocity will create a more natural feel to the movement.

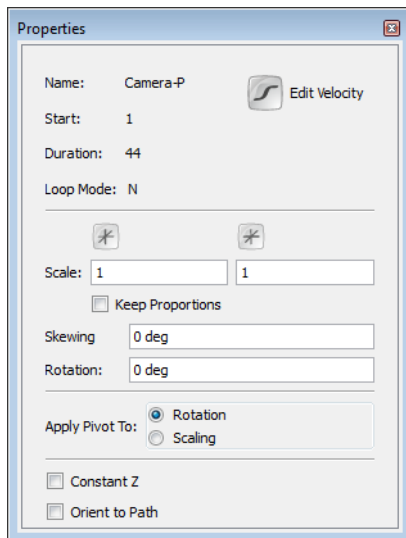



You can set your preferences so that when you create a motion path, a default velocity is automatically applied. Refer to the Preferences topic to learn how to set your preferences.

To adjust the velocity of a movement:

1. In the Sceneplanning Tools toolbar, select the Motion  tool.
2. In the Camera or Timeline view, select the motion path peg of which you want to adjust the velocity.

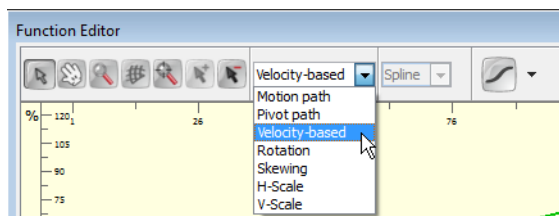
The selected peg properties will appear in the Properties view.




3. In the Properties view, click on the Edit Velocity  button.

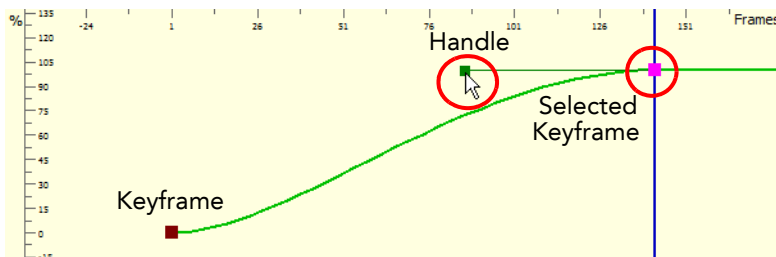
The Function Editor view opens.

4. In the drop-down menu, select Velocity-based, to edit the velocity of the motion path.



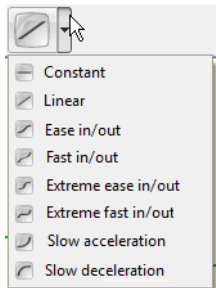
5. In the Function Editor view, click on the Curve  button and adjust your curve:

- ▶ Click on a keyframe to select it.
- ▶ Drag the handle to adjust the curve.



6. You can also use the default curve options to quickly adjust your velocity.

- ▶ Click on the Curve icon to open the drop-down menu and select the desired velocity option.



⇒  **Constant**

This option will change a non-constant segment to a constant segment removing the automatic motion tweening created by Toon Boom Studio.

⇒  **Linear**

This option will create a straight line of constant speed for a more automated animation look.

⇒  **Ease in/out**

This option will create a gradual acceleration at the beginning and a gradual deceleration at the end of the curve. This creates a more natural animation look.

⇒  **Fast in/out**

This option will create a curve that starts quickly, slows down in the middle and ends with a final acceleration.

⇒  **Extreme ease in/out**

This option will create a more dramatic ease in, ease out effect.

⇒  **Extreme fast in/out**

This option will create a more dramatic fast in, fast out effect.

⇒  **Slow acceleration**

This option will create a curve that starts slowly to smoothly accelerate over time.

⇒  **Slow deceleration**


This option will create a curve that starts quickly to smoothly decelerate over time.

## Adding and Deleting Motion Points in the Function Editor View

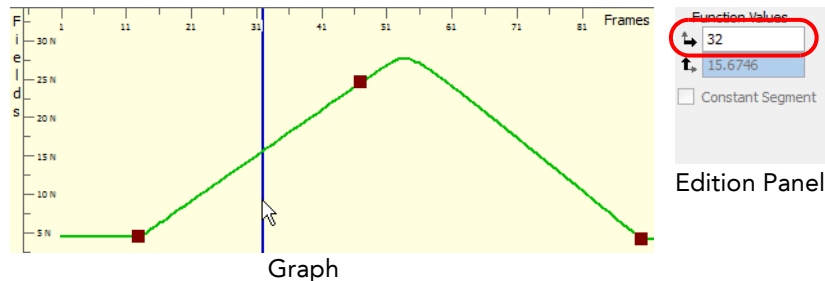
Modifications can be made to a motion path and any peg or element movement by adding and deleting motion points in the function curve. This is done in the Function Editor View.

### Adding Motion Points

To add motion points in the Function Editor View:

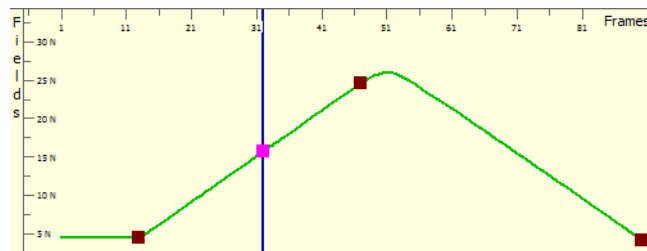
1. In the Sceneplanning Tools toolbar, select the Motion  tool.
2. In the Camera or Timeline view, select the peg of the motion path you want to edit.  
The selected peg's function curve will appear in the Function Editor View.
3. In the graph section, click on the frame number where you would like to add a motion point. You can also type in the desired frame in the Editing Panel.


In the graph section, the selected frame number is indicated by a blue vertical line.



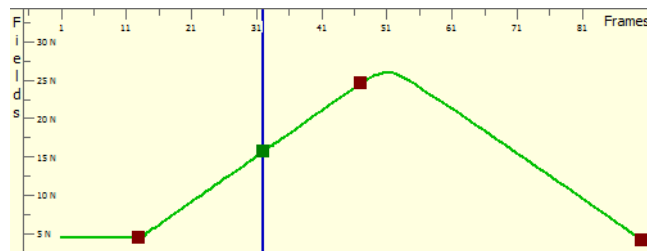
4. Click on the Add Keyframes  button.


A keyframe will appear on the function curve at the selected frame. This new keyframe will also be visible on your motion path in the Camera, Top and Side views as well as on your peg layer in the Timeline view.



- ▶ If you want the new motion point to be a control point rather than a keyframe, click on the Lock In Time  button to disable it.


The selected keyframe will change into a control point.



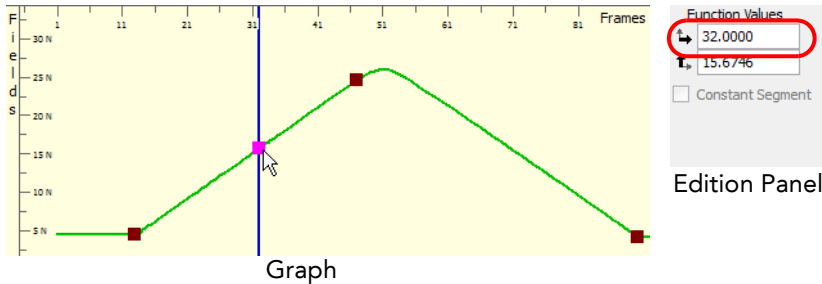
- ▶ To change a control point into a keyframe, select the control point on the function curve and click on the Lock In Time  button to enable it. The selected control point will change into a keyframe.


## Delete Motion Points

To remove motion points from the Function Editor View:

1. In the Sceneplanning Tools toolbar, select the Motion  tool.
2. In the Camera or Timeline view, select the peg of the motion path you want to edit.  
The selected peg's function curve will appear in the Function Editor view.
3. In the graph section, click on the motion point you want to delete. You can also type in the desired frame in the Edition Panel.

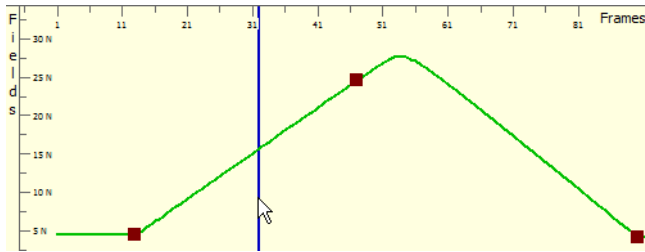
The selected motion point will be highlighted in the function curve.



- ▶ If the selected motion point is a control point, you first need to change it to a keyframe by clicking on the Lock In Time  button to enable it.

4. Click on the Remove Keyframe  button.


The selected keyframe is deleted from the function curve. It will also be deleted from your motion path in the Camera, Top and Side views as well as on your peg layer in the Timeline view.



## Changing the Values of a Motion Point

You can modify your motion paths and movements by positioning the motion points directly in the Camera, Top or Side view, but you can also modify the value of the motion points from the Function Editor View.

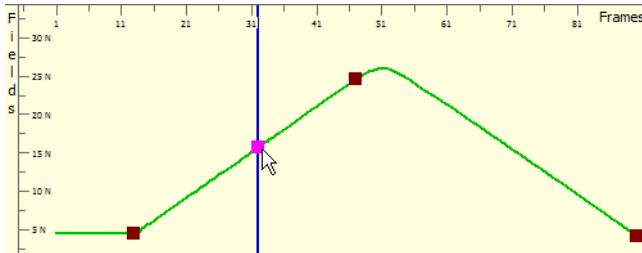
**To modify a motion path motion point's values:**


1. In the Sceneplanning Tools toolbar, select the Motion  tool.
2. In the Camera or Timeline view, select the peg of the motion path you want to edit.

The selected peg's function curve will appear in the Function Editor view.

3. In the graph section, click on the motion point you want to reposition.

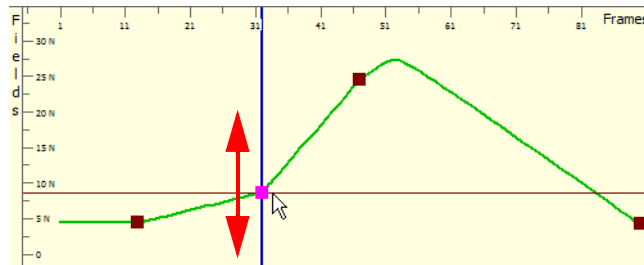
The selected motion point will be highlighted in the function curve.



4. Choose with the Field Values  buttons which values; North/South, East/West or Forward/Backward you want to edit and display in the vertical value scale of the graph.

5. Position your motion point:
  - ▶ **Keyframe:**

- ⇒ Drag your keyframe up and down to modify the Fields value of the keyframe. Since a keyframe is locked in time you can not modify the Frame value. A red guide appears to help you align the keyframe to the right value.



- ⇒ You can also type in the desired value in the Editing Panel.

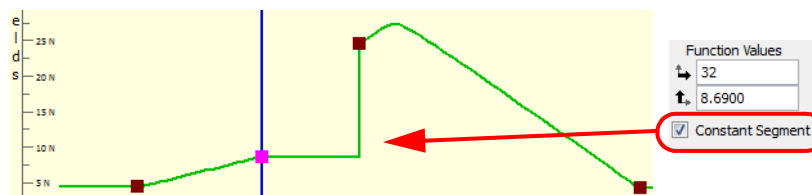
Function Values

↔ 32

↑ 8.6900

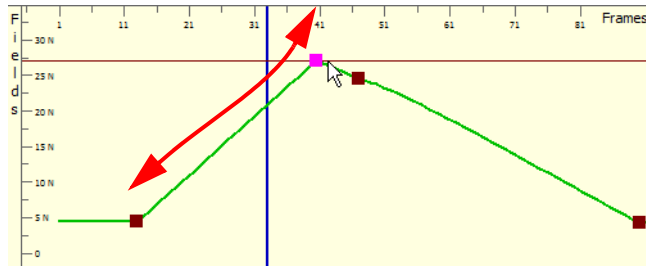
Constant Segment

- ⇒ Enable the Constant Segment option if you want to change the non-constant segment following the selected keyframe to constant.

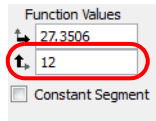


▶ **Control Point**

⇒ Drag your control point along the curve to modify the Fields value. A control point is not locked in time but is constrained by the curve. The frame value will automatically be changed in relation to the fields value you are giving it. A red guide appears to help you align the keyframe to the right value.



⇒ You can also type in the desired value in the Editing Panel.



## Other Options

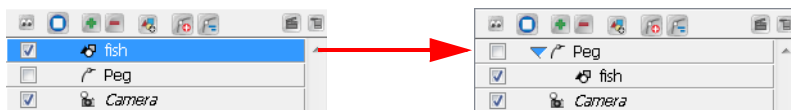
Many features, options and tools are available to help you learn, create and optimize your projects. Here are some which are useful when setting up your scene and creating motion paths:

- Attach to Next Object, on page 389
- Detach from Parent, on page 389
- Change Start Frame, on page 390
- Change Duration, on page 390
- Change Loops, on page 391
- Element Notes, on page 392
- Show Timeline Selection, on page 393
- Paste Special, on page 394

### Attach to Next Object

You can easily connect elements to one another using drag and drops in the Timeline view. If you prefer, you can also use the Attach to Next Object when it is time to create a hierarchy.

The Attach to Next Object command will connect the selected element to the one situated one level lower in the Timeline view order making it its child.



To attach elements using the Attach to Next Object command:


1. In the Timeline view, select the element you want to attach to the element situated immediately below it.
  - ▶ You can also use a scenepanning tool and select the element directly in the Camera, Top or Side view.
2. Select **Element > Arrange > Attach to Next Object**.

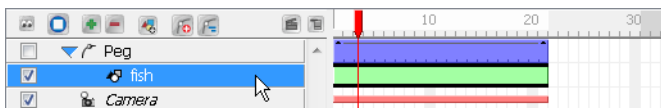
The selected element will become the child of the element that was situated under it.

### Detach from Parent

You can easily manipulate hierarchy connections using drag and drops in the Timeline view. If you prefer, you can also use the Detach from Parent command to disconnect a child element from its parent from the Camera, Top or Side view.

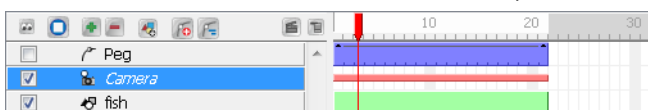
To detach a child element from its parent:

1. In the Scenepanning Tools toolbar, click on the Select  tool. You can also access the Select tool by going to **Tools > Scenepanning Tools > Select**.
2. In the Camera, Top or Side view, select the element you wish to detach from its parent. You can also select the element directly in the Timeline view.



3. Select **Element > Arrange > Detach from Parent**.

The selected element will be detached from its parent.

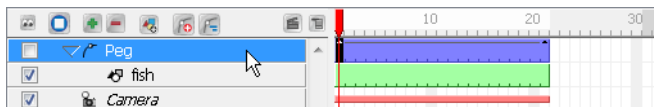


## Change Start Frame

You can quickly offset the timing of elements in your scene. This can be useful if for instance, you realize that the planned action would be better occurring at a later moment or if you inserted new elements or action at the beginning of your Timeline.

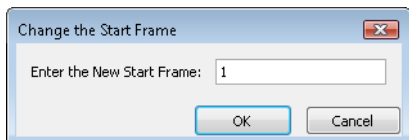
**To change the starting frame of an element or peg's motion:**

1. In the Timeline view, select the element you want to offset.

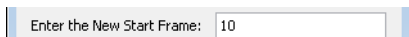


2. Select **Element > Change Start Frame** from the top menu.

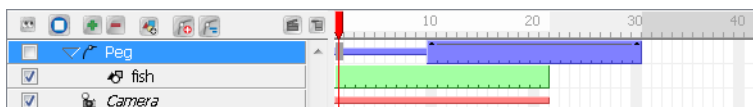
The **Change Start Frame** dialog box opens.



3. In the Change Start Frame dialog box, type in the frame number where you want your element to start.



The starting frame of the selected element will be changed to the one you typed in the Change Start Frame dialog box.

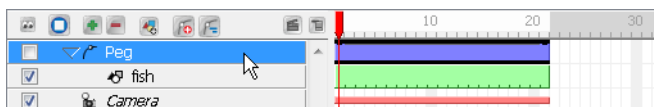


## Change Duration

You may need to extend the duration of a peg, for example if you add content or change the exposure of the element that is attached to it.

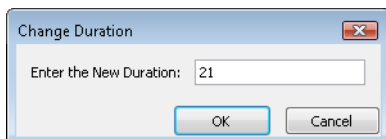
**To change the duration of a motion:**

1. In the Timeline view, select the peg element of which you want to change the duration.



2. Select **Element > Change Duration** from the top menu.

The **Change Duration** dialog box opens.

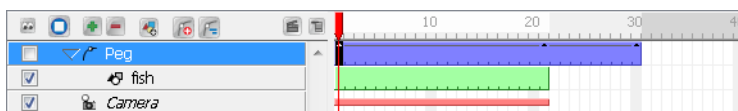


The Enter the New Duration field displays the current duration of your element.

3. In the Change Duration dialog box, type in the desired duration.



The duration of the selected element will be updated.

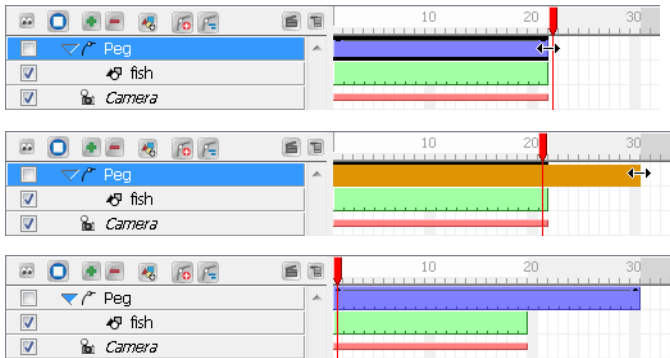


The duration of a peg element can also be changed by stretching the peg's motion block in the Timeline view.



**To stretch a Peg element:**

1. In the Timeline view, move the pointer to the edge of the peg element's motion block and drag it right or left to increase or decrease the length of the motion.



**NOTE:** Stretching a peg moves all of the keyframes proportionally.

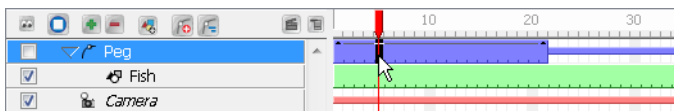
## Change Loops

If you want a Peg element to repeat a motion, you can loop it.

Note that each time the loop restarts, it skips the first frame of the peg. This is 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 action three times, the entire length of the peg will be 28 frames.

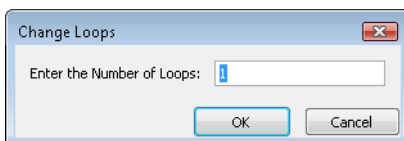
**To loop a peg motion using the Change Loops command:**

1. In the Timeline view, click on the Peg element's motion segment you wish to loop.



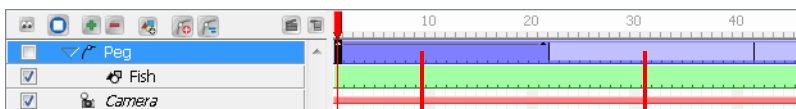
1. Select **Element > Change Loops** from the top menu. You can also right-click (Windows) or [Ctrl]-click (Mac OS X) directly on the Peg element's motion segment you wish to loop and select **Change Loops** from the pop up menu.

The **Change Loops** dialog box opens.



2. In the Change Loops dialog box, type the number of times you want to repeat the selected motion segment and click OK.

The peg now repeats itself for the number of loops you selected. After the first segment, the peg motion bar representing the looped segment is displayed in light gray.



Original motion      Looped segment

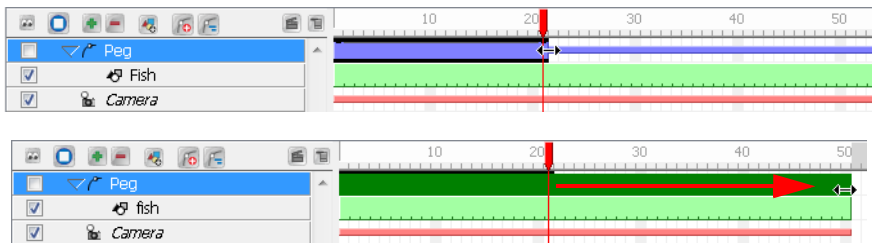


To remove the loop, go through the previous step by step once again and type the value 0 in the Change Loops dialog box.

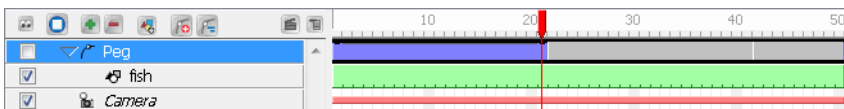
You can also loop a motion with a click and drag.

**To loop a peg motion by dragging the motion segment:**

1. In the Timeline view, hold [Ctrl] (Windows) or [⌘] (Mac OS X) and drag the end of the peg's motion segment to the desired position.



2. Release to create a loop that will repeat until the destination frame.

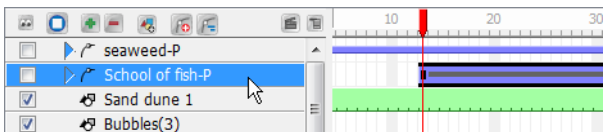


## Element Notes

The Element Notes option lets you write notes or comments in a layer for future reference.

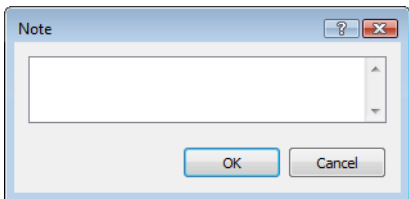
**To create an element note:**

1. In the Timeline view, select the layer in which you want to include a note or a comment.

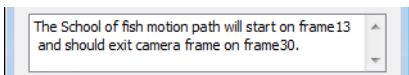


2. In the Timeline menu, select **Add Element Note**. You can also Right-click (Windows) or [Ctrl]+click (Mac OS X) on the layer and select **Add Element Note** from the pop-up menu.

The **Note** dialog box opens.



3. In the empty text field, type in your note or comment.



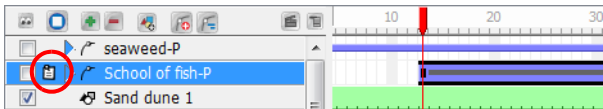
4. Press on the OK button.

The **Note** icon will appear on the Selected Layer.



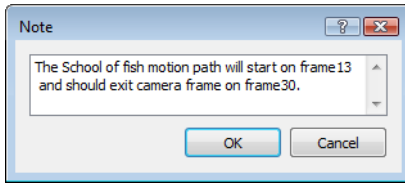
**To open and edit an element note:**

1. In the Timeline view, select the layer containing the element note.



- In the Timeline menu, select **Update Element Note**. You can also Right-click (Windows) or [Ctrl]+click (Mac OS X) on the layer and select Update Element Note from the pop up menu or double-click on the Note icon of the layer.

The **Note** dialog opens, displaying the element's note previously entered.



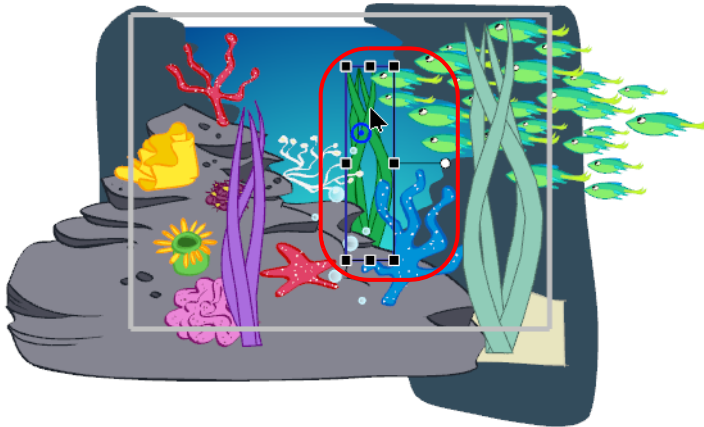
- You can edit the note if you need to and press on the **OK** button to close it.

## Show Timeline Selection

Use this option if your scene becomes crowded and you want to quickly find the layer in the Timeline view that corresponds to the selected element in the Camera view.

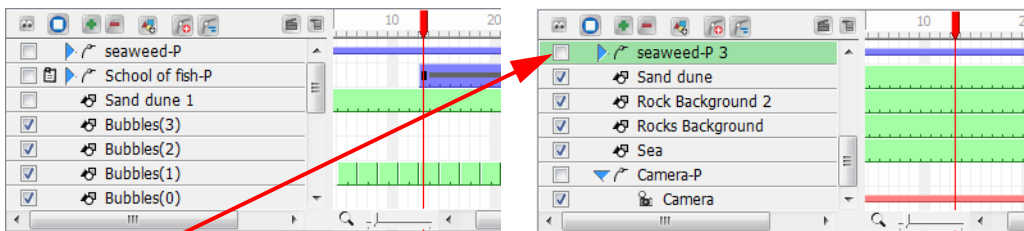
**To show the timeline selection:**

- In the Camera view, select the element you want to find in the Timeline view.



- Select **View > Show Timeline Selection**. The default keyboard shortcut is [O].

The Timeline view automatically sets its focus so that the selected layer appears on top of the view.

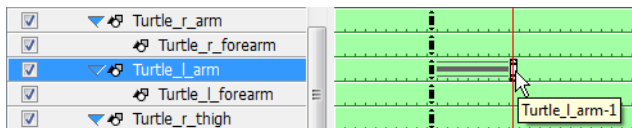


## Paste Special

Use the Paste Special command to paste a copied selection of frames in the Timeline view and to define which properties you want to paste.

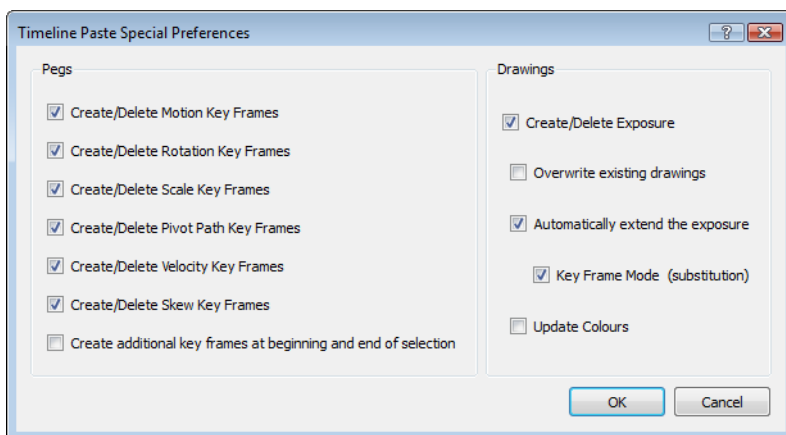
**To use the Paste Special command:**

1. In the Timeline view, select the frames to copy. This selection can include single or multiple frames, drawings and keyframes.



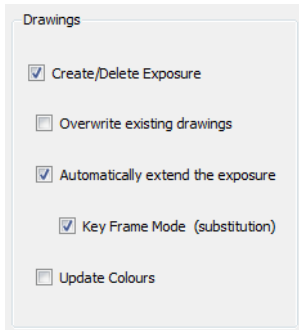
2. Select **Edit > Copy Cell**. The default keyboard shortcut is [Ctrl]+[C] (Windows) or [⌘]+[C] (Mac OS X).
3. In the Timeline view, select the cell in which you want to paste the copied values.
4. Select **Edit > Paste Special**. The default keyboard shortcut is [Ctrl]+[B] (Windows) or [⌘]+[B] (Mac OS X).

The **Timeline Paste Special Preferences** dialog box opens.



5. In the Pegs section enable or disable the options to choose the values of the keyframe you want to paste:
  - **Create/Delete Motion Key Frames**  
Enable this option to paste the translation value of the copied keyframe.
  - **Create/Delete Rotation Key Frames**  
Enable this option to paste the rotation value of the copied keyframe.
  - **Create/Delete Scale Key Frames**  
Enable this option to paste the scale value of the copied keyframe.
  - **Create/Delete Pivot Key Frames**  
Enable this option to paste the pivot position value of the copied keyframe.
  - **Create/Delete Velocity Key Frames**  
Enable this option to paste the velocity value of the copied keyframe.
  - **Create/Delete Skew Key Frames**  
Enable this option to paste the skew value of the copied keyframe.
  - **Create additional key frames at beginning and end of selection**  
This option will create an additional keyframe at the beginning and at the end of your pasted selection to block the copied values between them.

6. In the Drawings section enable or disable the desired options.



- **Create/Delete Exposure**  
Enable this option to paste the drawing exposure. Disabling this option will grey out the rest of the Drawings options, as it will mean that you only wish to paste position and peg values.
- **Overwrite existing drawings**  
Enabling this option will overwrite existing drawings in the destination layer if they have the same name as the copied ones. When this option is disabled, new drawings will be created instead.
- **Automatically extend the exposure**  
This option will automatically extend the exposure of the last copied frame to the last frame of the destination layer, overwriting the existing exposure. Disabling this option will grey out the Keyframe Mode (substitution) option.
- **Keyframe Mode (substitution)**  
This option is used with the Automatically extend the exposure option. It will paste and extend the keyframe information of the copied element in the destination layer following the same rules as the Automatically extend the exposure option.
- **Update Colours**  
When pasting templates, this option updates the current animation colours to those used in the templates.



Refer to the *Animating a Puppet* chapter to learn how to copy and paste keyframes only from an element using the Paste Special command.

## Paste Special Again

Once you set up the proper option in the Paste Special dialog box, you can use the Paste Special Again command to quickly paste the parameters using the same options without going through the Paste Special dialog box.

### To use Paste Special Again:

1. In the Timeline view, select the frames you wish to copy. This selection can include single or multiple frames, drawings and keyframes.
2. Select **Edit > Copy Cell**. The default keyboard shortcut is [Ctrl]+[C] (Windows) or [⌘]+[C] (Mac OS X).
3. In the Timeline view, select the cell in which you want to paste the copied values.
4. Select **Edit > Paste Special Again**. The default keyboard shortcut is [Ctrl]+[Shift]+[B] (Windows) or [⌘]+[Shift]+[B] (Mac OS X).

Your copied selection will be pasted using the same options as the last time you used the Paste Special command.

## Preferences

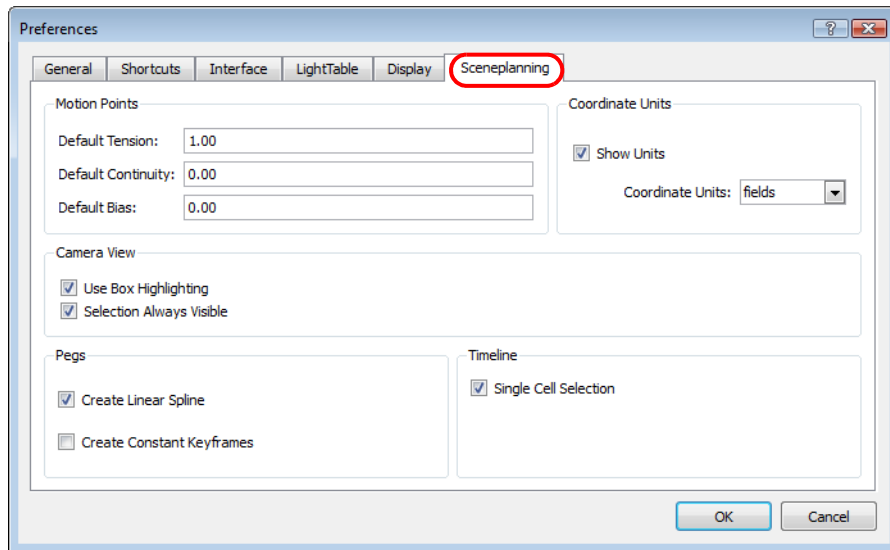
You can set preferences that can help you be more efficient and comfortable when you work on your scene setup:

In Toon Boom Studio, you can set your own preferences to fit your work style and needs when setting up your scene and creating motion paths.

**To open the preferences panel:**

- ▶ Windows  
Select **Edit > Preferences**.
- ▶ Mac OS X  
Select **Toon Boom Studio 7.1 > Preferences**.

## Sceneplanning Preferences



### Motion Points

In this section, you can set the default Tension, Continuity and Bias values when adding motion points to your motion paths.

Motion Points

Default Tension:

Default Continuity:

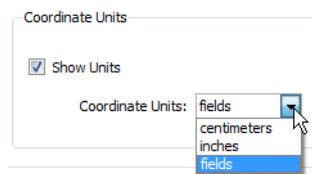
Default Bias:



Refer to the *Adjusting the Tension, Bias and Continuity* topic to learn more about these values.

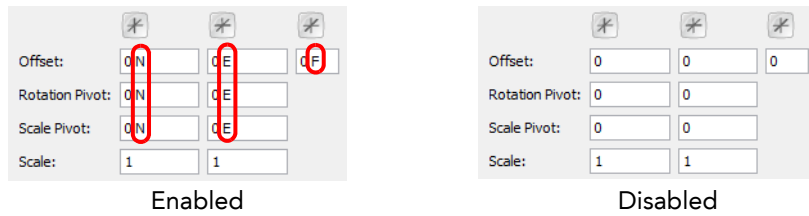
### Coordinate Units

You can choose the coordinate units used in the scene's Properties view.



## Show Units

Enable or Disable this option to show or hide the unit type in the Properties view. Note that the unit type can only be hidden when the unit type is set to fields.



## Coordinate Units

Use this drop-down menu to choose between the three available unit types.



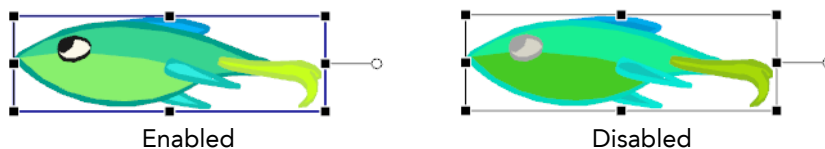
## Camera View

This section is where you set the selection display preferences for the Camera view.



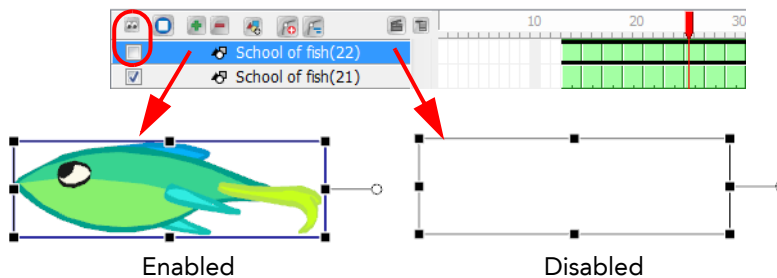
## Use Box Highlighting

When this option is enabled, the bounding box of a selected item in the Camera view is highlighted. When it is disabled, the bounding box is a regular thin grey line box and the element itself is highlighted.



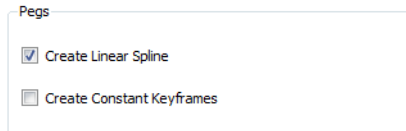
## Selection Always Visible

When this option is enabled, even when a layer is hidden in the Timeline view, it will remain visible in the Camera view when it is selected. When the option is disabled, a hidden layer in the Timeline view will remain hidden in the Camera view when it is selected.



## Pegs

Use the Pegs section options to set your preferences related to motion paths creation.



### Create Linear Spline

By default, the Create Linear Spline option is enabled, so when you animate an element with a motion, rotation or scaling, the velocity will be set to Linear. This means that the motion tweening executed by Toon Boom Studio will be straight with no variation in the speed. You can disable this option so that every time you create a motion, rotation or scaling, the velocity will be set to the default ease-in, ease-out curve.



Refer to the *Adjusting the Velocity* topic to learn more about velocity and ease-in, ease-out concept.

### Create Constant Keyframes

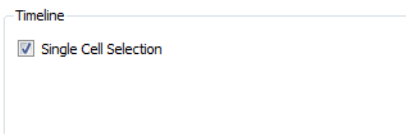
By default, the Create Constant Keyframes is disabled so every time you create a motion, a non-constant segment is created between every two keyframes and the motion tweening is automatically calculated by Studio.

You can enable the Create Constant Keyframes so that every time you create a motion, the segments in between the keyframes will automatically be constant. No motion tweening is calculated and the position jumps from one to another at each keyframe.



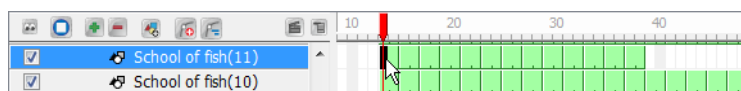
Refer to the *Animating a Puppet* chapter to learn more about constant and non-constant segments.

## Timeline

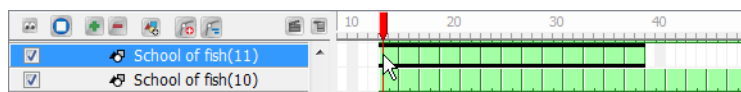


### Single Cell Selection

This option is enabled by default. This means that when you select a cell in the Timeline view, only this cell is selected. You can disable this option so that when you select a cell in the Timeline view, the entire exposure block of this layer is selected at once.



Enabled



Disabled



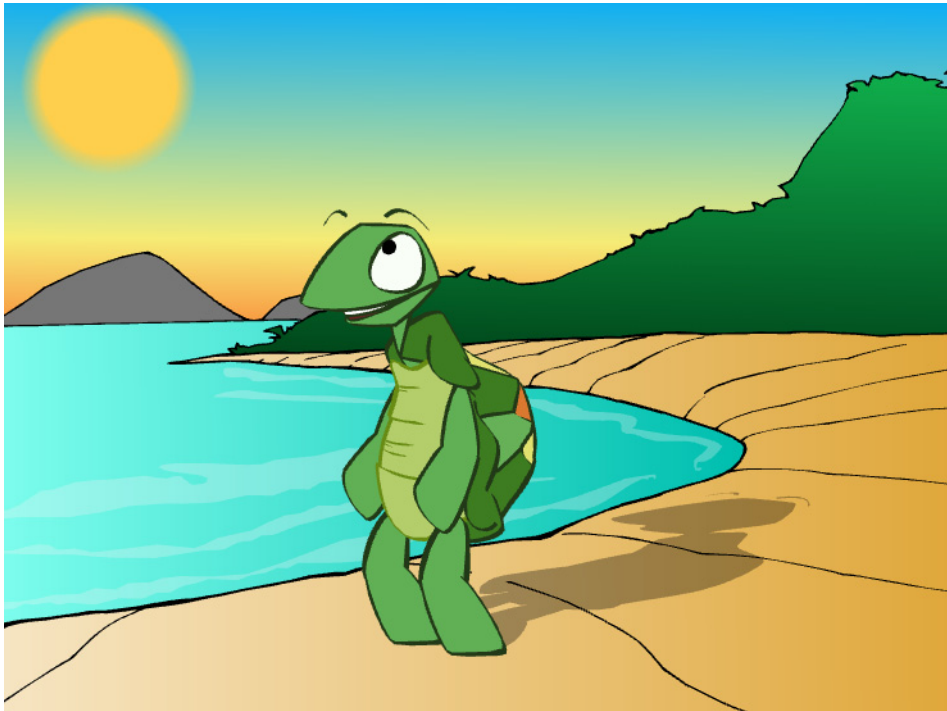
## What's Next?

In this chapter, you learned about the following:

- Ordering Elements
- Positioning Scene Elements
- Duplicating and Cloning Elements
- Setting the Camera Frame
- Creating a Multiplane
- Creating a Motion Path
- Animating a Camera
- Using Paste Special

Is it now time to learn about using Toon Boom Studio's effects to enhance your animation project.





The most important part of animation is creating life-like movement, followed by telling a good story and the creation of memorable characters. However, when all that is done, it is nice to add a little icing on the cake. Enhance your animation by giving it some subtle atmosphere, or by turning up the wow factor. Toon Boom Studio offers eleven different pre-installed effects to choose from.

- Special Effects, on page 402
- Forces of Nature Effects, on page 427
- Disabling All Effects, on page 438

## Special Effects

Use Toon Boom Studio's special effects to add a shadow to your character that follows its every movement, to softening the edges of atmospheric elements, such as the sun and clouds, as well as to create a beautiful sunset and much, much more.

- Clipping Effect, on page 403
- Feather Edge Effect, on page 408
- Drop Shadow Effect, on page 410
- Colour Transform Effect, on page 415
- Blur Effect, on page 420
- Shake Effect, on page 424

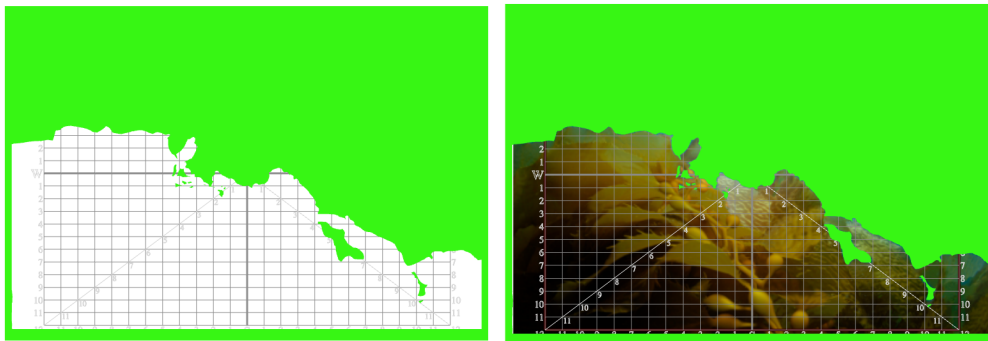
## Clipping Effect




The Clipping effect can also be called Mask effect. This effect allows you to cut and hide part of your animation. For example, if your background is a picture of the seabed with seaweed in front, you may want your animation to pass between the seaweed and the rest of the images instead of passing in front.

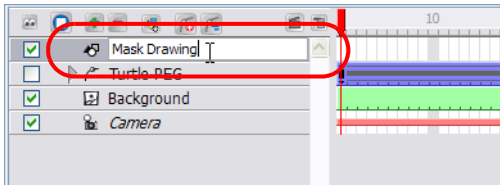



To do so, you will need to create a drawing of the zone where you want your animation to appear and connect it to a Clipping effect. This drawing is called a Mask. The Clipping effect will hide any portion of your animation outside of the mask drawing you did. It will hide it not delete it. Your animation remains intact.

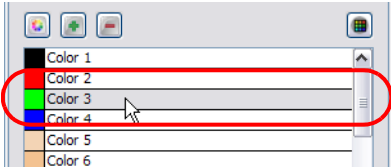


**To create a Clipping effect:**

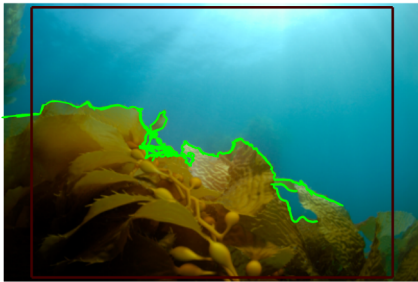
1. In the Timeline view, click on the Add Drawing Element  button to add a new layer for your mask drawing.
2. Double-click on the new layer and rename it **Mask Drawing**.




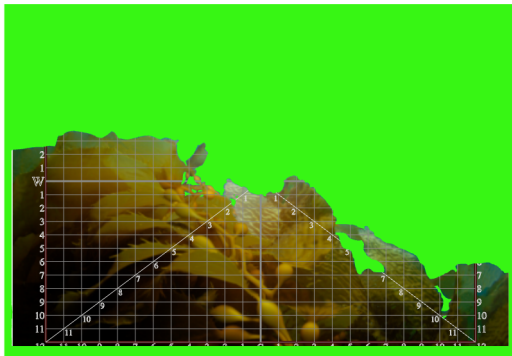
3. In the Tools toolbar, select the Brush  tool.
4. In the Colour Palette view, select any bright colour.





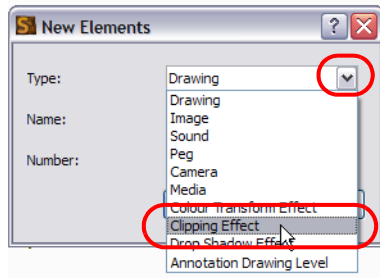
5. In the Camera view, trace the section that you want to remain visible in your animation.



6. In the Tools toolbar, select the Paint  tool.
7. In the Camera view, paint the closed zones of your mask drawing.



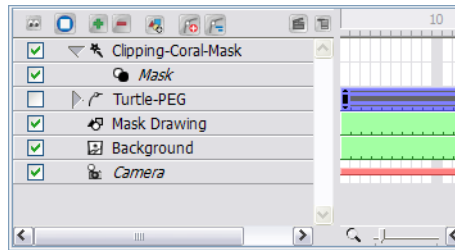
8. In the Effects toolbar, click on the Clipping effect  button.  
You can also add the Clipping effect from the Timeline view.
  - ▶ In the Timeline view, click on the Add Element  button.
  - ▶ The **New Elements** dialog box opens.
  - ▶ In the Type drop-down menu, select the Clipping Effect layer.



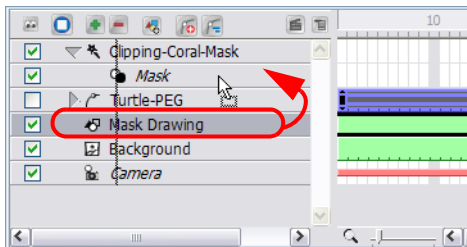
- ▶ In the Name field, rename the effect appropriately.



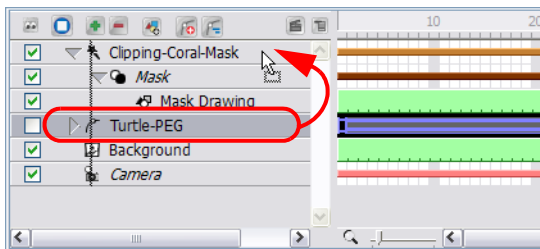
- ▶ Click on the OK button.



9. In the Timeline view, select your Mask drawing and drag it **ONTO** the Clipping's Mask layer.



10. Select your image or animation and drag it **ONTO** the Clipping Effect layer.



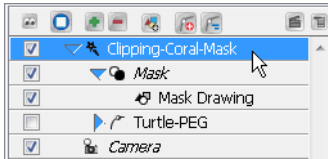
11. Playback your animation. You should now see only the portion you want to be visible.



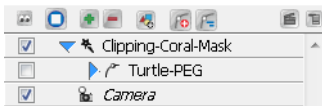
If you feel that your Timeline view is too crowded with the effects that you are adding, you can hide the mask elements of your Clipping effects. This will hide the mask layers in the Timeline view without disabling the effect.

**To hide the mask elements of a selected Clipping effect:**

1. In the Timeline view, select the Clipping effect.



2. From the Timeline view's contextual menu, select **Display > Hide Effect Parameters**.  
You can also select **View > Effects > Hide Effect Parameters** from the top menu.



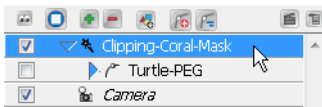
**To hide the mask elements of all Clipping effects:**

1. From the Timeline view's contextual menu, select **Display > Hide All Effects Parameters**.  
You can also select **View > Effects > Hide All Effects Parameters** from the top menu.

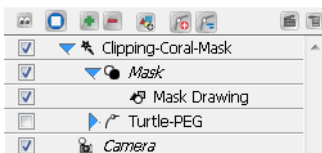
Once you chose to hide the effect parameters, you can easily display them again.

**To show the hidden mask elements of a selected Clipping effect:**

1. In the Timeline view, select the Clipping effect whose mask elements are hidden.




2. From the Timeline view's contextual menu, select **Display > Show Effect Parameters**.  
You can also select **View > Effects > Show Effect Parameters** from the top menu.

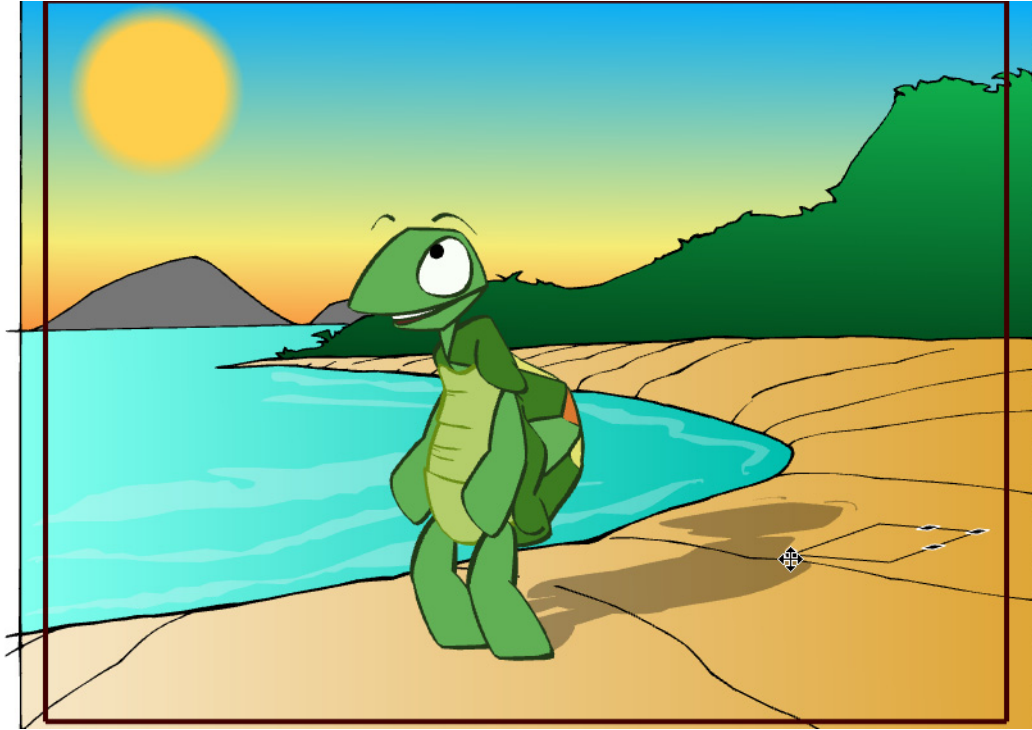




**To show the hidden mask elements of all Clipping effects:**

1. From the Timeline view's contextual  menu, select **Display > Show All Effects Parameters**.  
You can also select **View > Effects > Show All Effects Parameters** from the top menu.

## Feather Edge Effect



If you have a drawing of something such as the sun or a flame, you may want to soften or blur the edges. Toon Boom Studio has a Feather Edge effect that you can use for this. This effect is not done in the Timeline view; rather a transformation is applied directly onto your drawing. If you decide to add feather edges to your drawing, it will most certainly appear transformed.

The Feather Edge effect is different from the Blur effect. A Blur effect transforms your image into a bitmap image. The Feather Edge effect remains vector-based.



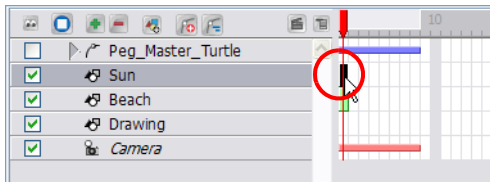
If you zoom in very close to your drawing, you will see that several rims of different transparency are added around your drawing, creating the soft edge illusion.




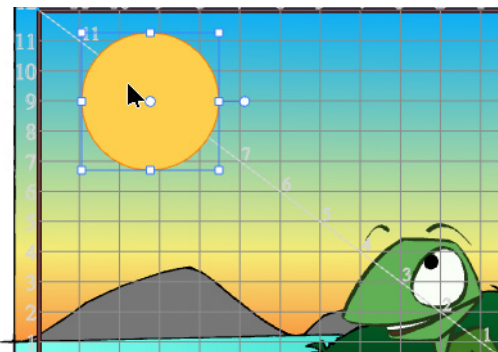
It is not recommended to apply the Feather Edge effect on an entire animation sequence because it can be heavy to handle and export. Apply this effect on single drawings such as the Sun or a cloud.

**To create a feather edge:**

1. In the Timeline view, select the cell containing the drawing on which you want to apply a feather edge on.

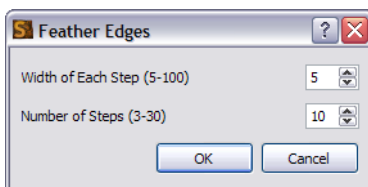


2. In the Drawing Tools toolbar, select the Select  tool.
3. In the Camera or Drawing view, select the drawing area you want to apply a feather edge on.



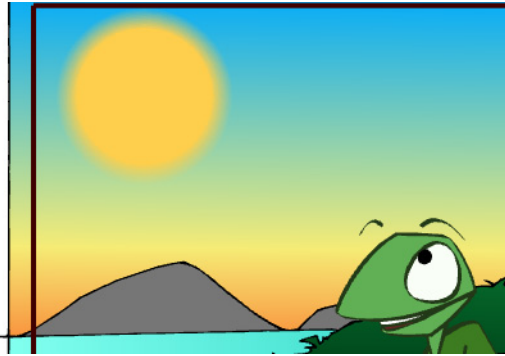
4. In the top menu, select **Tools > Feather Edges**.

The **Feather Edges** dialog box opens.

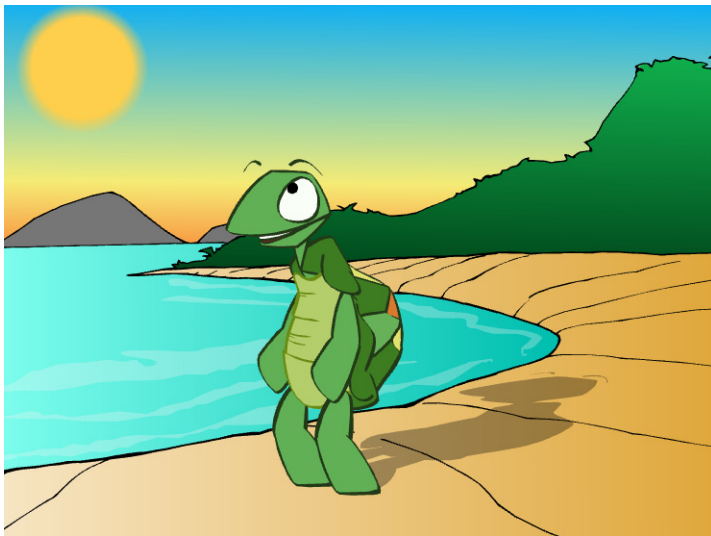


5. In the Width of Each Step field, indicate how wide each rim around the drawing edge should be.
6. In the Number of Steps field, indicate how many rims you want around the edge of your drawing.

7. Click on the OK button.




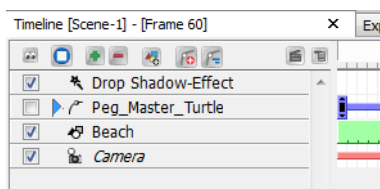
## Drop Shadow Effect




To really improve the look of your scene, you can use the Drop Shadow effect. It is easy and efficient to use. If you have a light source such as the sun or a lamp in a scene, use the Drop Shadow effect to give a more convincing look to your scene. The shadow you create will follow your animation, even if you do some modifications afterward.

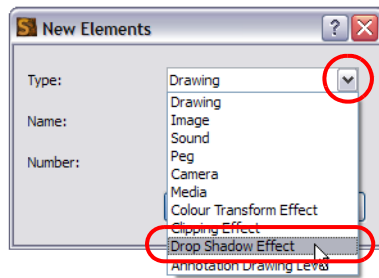
**To create a Drop Shadow effect:**

1. In the Special Effects toolbar, click on the Drop Shadow effect  button.

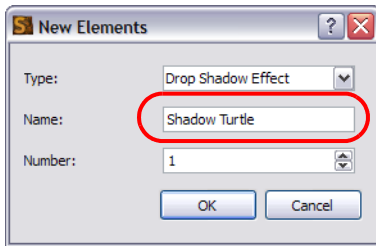


You can also add the Drop Shadow effect from the Timeline toolbar.

- ▶ In the Timeline view, click on the Add Element  button.
- ▶ The **New Elements** dialog box opens.
- ▶ In the Type drop-down menu, select the Drop Shadow Effect layer.

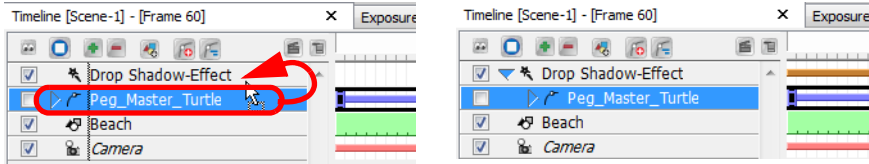


- ▶ In the Name field, rename the effect appropriately.

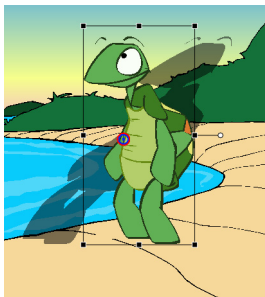


- ▶ Click on the OK button.

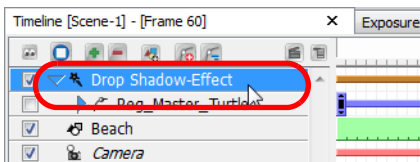
2. Drag the selected layer ONTO the Drop Shadow layer.



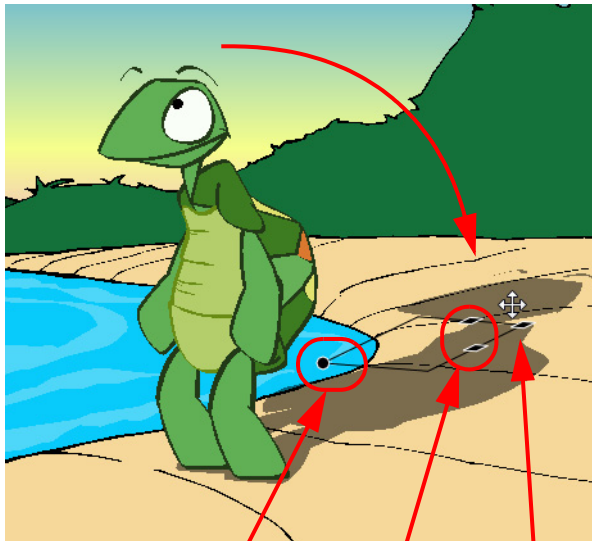
The shadow appears in the Camera view.



3. In the Timeline view, select the Drop Shadow effect.



4. In the Camera view, click on the shadow's anchor points and position the drop shadow properly.

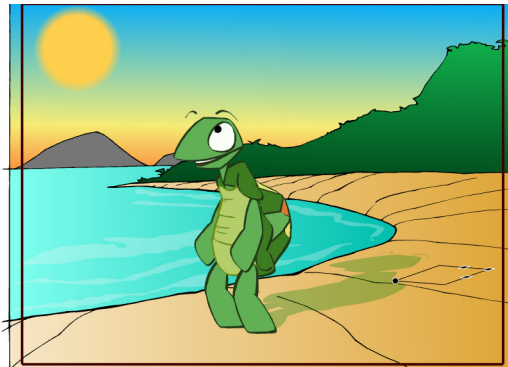
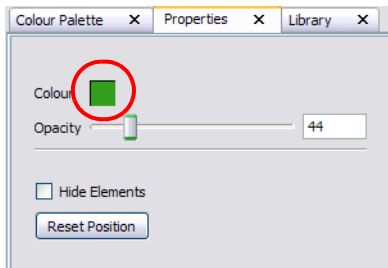


Move

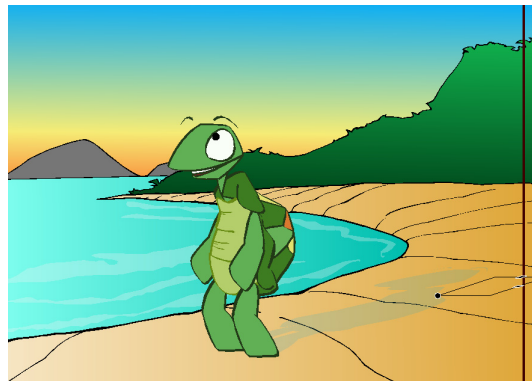
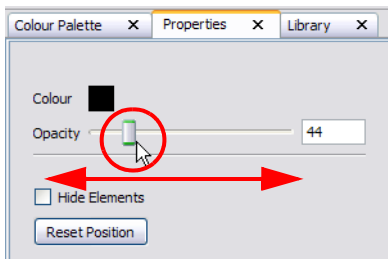
Skew

Scale

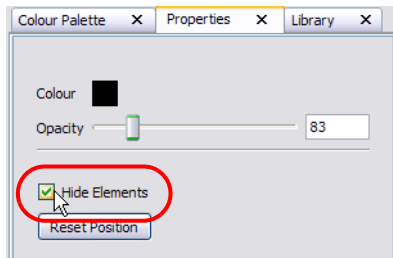
5. In the Properties view, double-click on the Colour swatch to adjust the shadow colour.



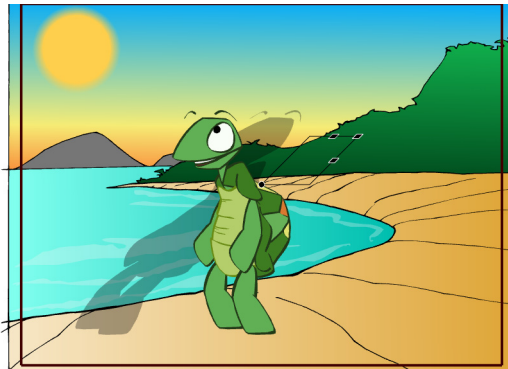
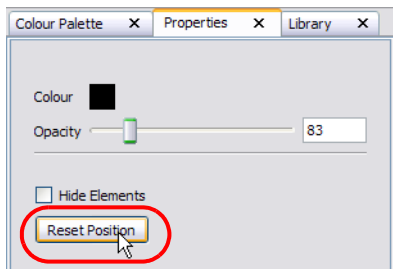
6. In the Properties view, move the Opacity slider left or right to adjust the shadow's transparency.



7. In the Properties view, enable the Hide Elements option if you want to temporarily hide the original drawing while you reposition its shadow.



8. In the Properties view, click on the Reset Position button if you want to cancel any position modifications you did to the shadow.







## Colour Transform Effect

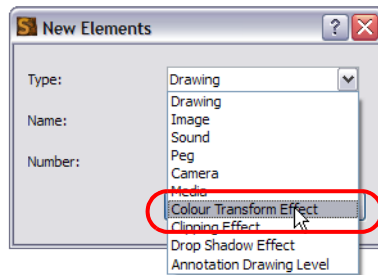


If you animate a sunrise, a distant object moving closer to the camera or something appearing and disappearing etc., you can use the Colour Transform effect to animate a colour or transparency change.

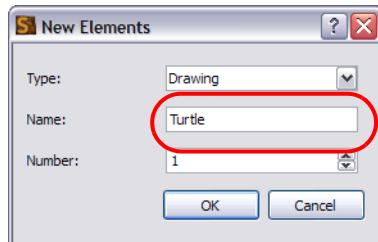
With the Colour Transform effect, you can change the overall colour or transparency of an element and set keys on different frames. Toon Boom Studio will animate the colour change between these frames. This way, while the sun rises, you can change the colour of the sky from apple green to azure blue, or change a ghost transparency level from fully transparent to completely opaque.

**To create a Colour Transform effect:**

- In the Special Effects tool bar, click on the Colour Transform  button.  
You can also add the Colour Transform effect from the Timeline toolbar.
  - In the Timeline view, click on the Add Element  button.
  - The **New Elements** dialog box opens.
  - In the Type drop-down menu, select the Colour Transform Effect layer.



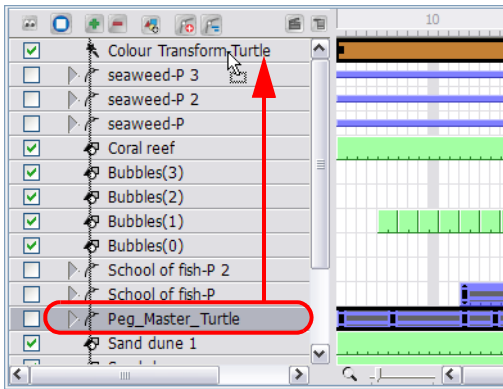
- In the Name field, rename the effect appropriately.



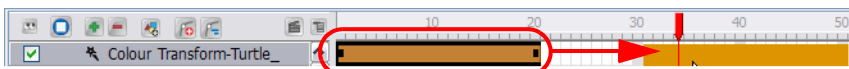
- Click on the OK button.

A new Colour Transform layer appears in the Timeline view. By default, the effect has a 20 frame transition with two keyframes, one at the beginning and one at the end. No values are entered in these keyframes.

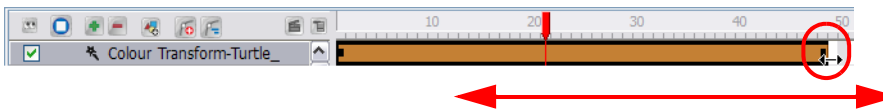
- In the Timeline view, select the layers you want to apply the colour transformation on and drag them ONTO the Colour Transformation layer.



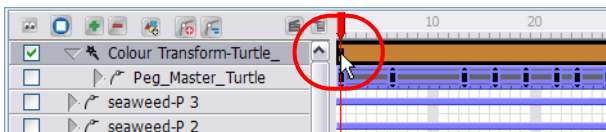
- If you do not want the colour transformation to start at the first frame, you can select the transition cells and drag them to the starting frame you want.



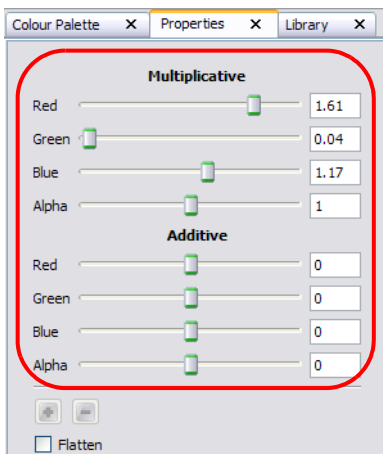
- If you want the transition to be shorter or longer, select the end of the transition, wait until you get the double arrow cursor and pull or push on it.



- In the Timeline view, go to the frame containing your transition first keyframe and select the Colour Transform layer.



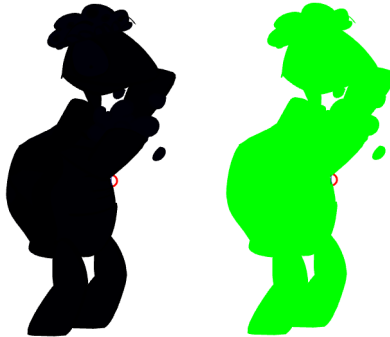
- In the Properties view, adjust the colour parameters either using the Additive or the Multiplicative settings. You can adjust the red (R), green (G), blue (B) and alpha (transparency) parameters.



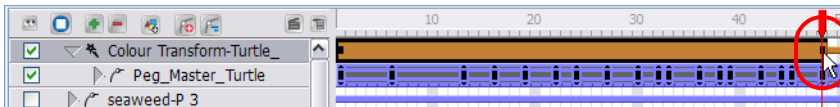
- ▶ The more you increase the Multiplicative values, the more washed-out your colours will be. The more you decrease it, the darker your colours will be.



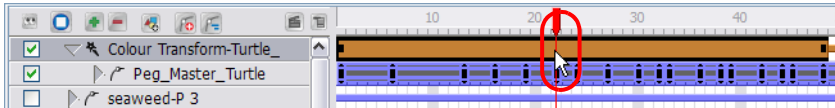
- ▶ The more you increase the Additive values, the more red, green or blue will be mixed in your original colours. The more you decrease the Additive values the more red, green or blue will be removed from your colours. You can end up with a white, black, red, green, yellow or blue drawing using these parameters.





7. In the Timeline view, go to the last frame of your transition and select the Colour Transform layer.

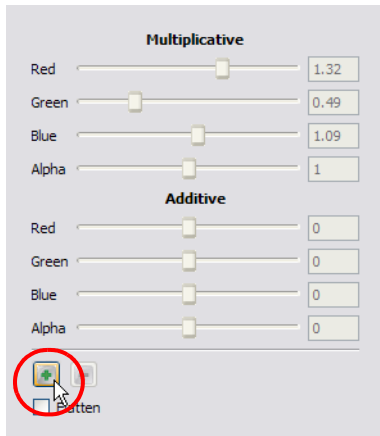


8. In the Properties view, adjust the colour parameters for your second colour keyframe.
9. If you want to add a new keyframe in your Colour Transformation effect, in the Timeline view, go to the desired frame and select the Colour Transform layer.



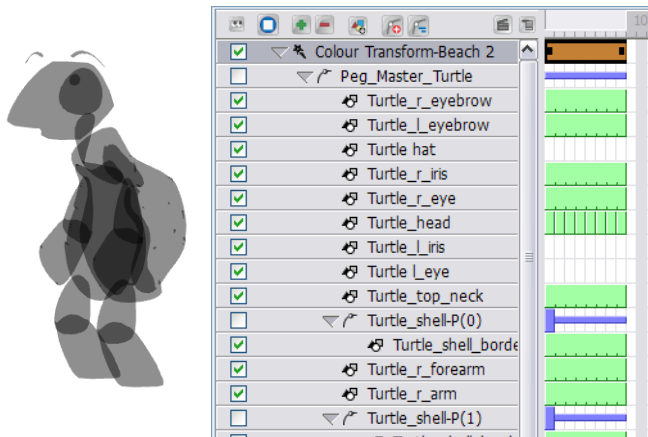
10. In the Properties view, click on the Add Keyframe  button.

- ▶ You can use the Delete Keyframe  button to remove a keyframe you may have added earlier. Note that you cannot delete the first and last keyframe.

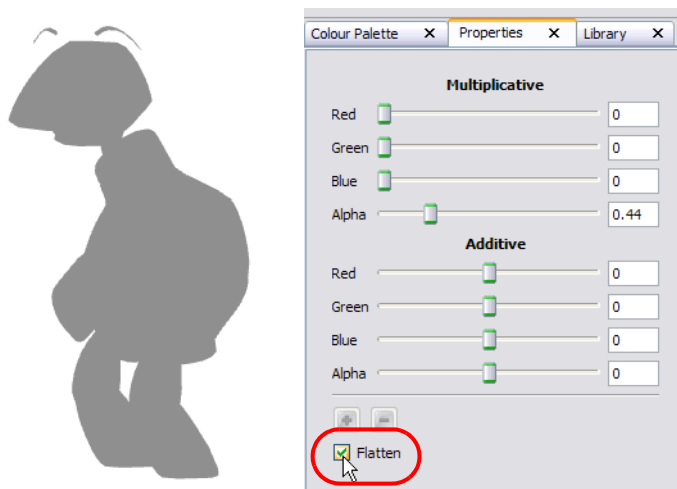


In the Properties view, adjust the colour parameters.

11. If you are creating your own custom drop shadow effect or any other effect involving transparency and several drawing layers, you may want to flatten the final result.
12. Because the shapes become semi-transparent, the zone becomes darker when two drawings overlap.



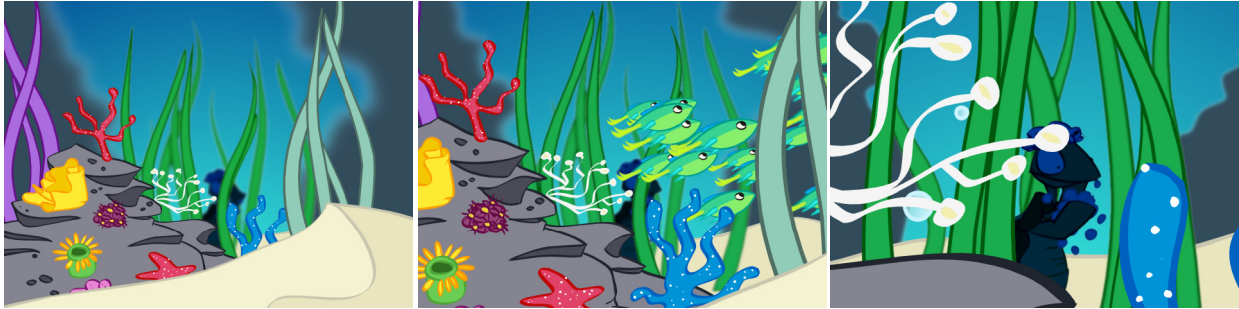
- ▶ In the Properties view, enable the Flatten option to get a uniform result.



13. Play back your scene to see the final result.




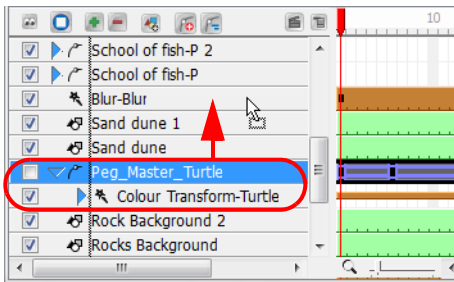
## Blur Effect



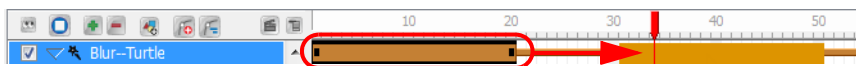
If you are animating an image that is visible from a great distance, or through adverse weather conditions such as fog, you can use the Blur effect to give a soft-focus look to your image. With the Blur effect, you can alter the overall blurriness of an element and then set keyframes to animate the blurriness over time. In this way, you can both increase and decrease the level of blurriness throughout the animation.

### To create a Blur effect:

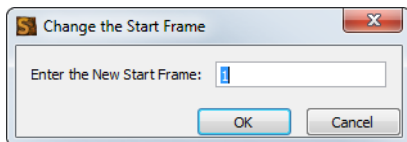
1. In the Special Effects toolbar, click on the Blur effect  button.
2. In the Timeline view, select the drawing layer that you would like to attach to the Blur effect and drag it onto the Blur effect layer.



3. Double-click on your Blur effect layer to rename it in accordance with the Drawing layer that is attached to it. This is good practice, as you may want to add more than one Blur effect to your Timeline. You may want to add more than one Blur effect because as the camera approaches different elements, those elements in front will come into focus before those farther back. In order to create different timing sequences, you need multiple versions of the same effect.
4. If you do not want the Blur effect to start at the first frame, you can select the effect's cells and drag them to the starting frame that you prefer.

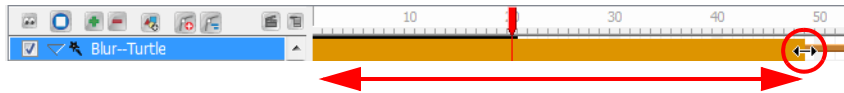


You can also right-click anywhere on the effect's cells and select **Change Start Frame** from the pop-up menu.

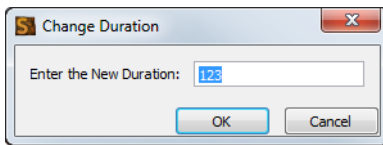


Enter the start frame that you would like into the Enter the New Start Frame field and click OK. The entire row of effect cells will be shifted down the Timeline.

- If you want the transition to be shorter or longer, select the end of the group of frames, wait until you get the double arrow cursor and then pull towards the left or right.

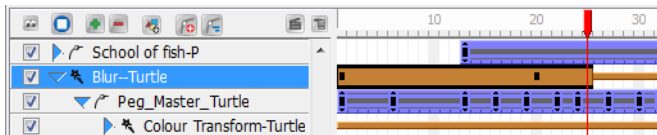



You can also right-click anywhere on the effect's cells and select **Change Duration** from the pop-up menu.

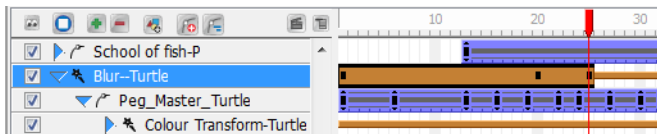


Enter the duration that you would like the effect to last for in the Enter the New Duration field and click OK. The exposure of the effect will be extended or shortened depending on the value entered.

- In the Timeline view, drag the red playhead to the frame on your effect layer where you would like to add a keyframe.

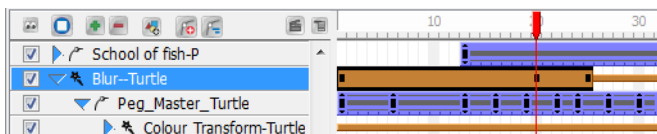


In the Tool Properties panel for the Blur effect, click on the Add Keyframe  button.

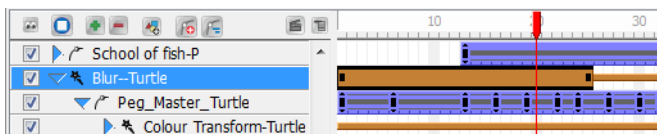


A new keyframe is added to the chosen location.

- In the Timeline view, drag the red playhead to a frame on your effect layer where you would like to delete a keyframe.

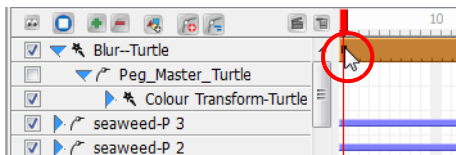


In the Tool Properties panel for the Blur effect, click on the Delete Keyframe  button.



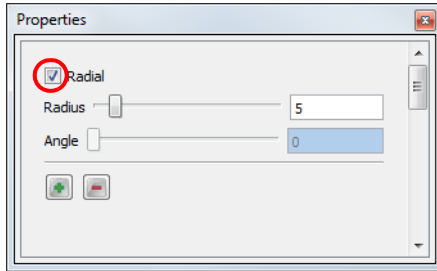
The keyframe is deleted from the chosen location.

- In the Timeline view, go to the frame containing your first keyframe and select the Blur effect layer.

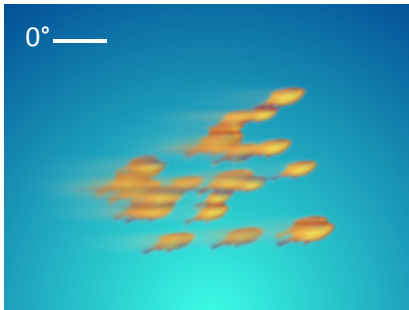


- In the Properties view, move the Radius slider to increase or decrease the Blur Radius, or simply enter a value directly into the field. You can enter decimal increments for more precision.

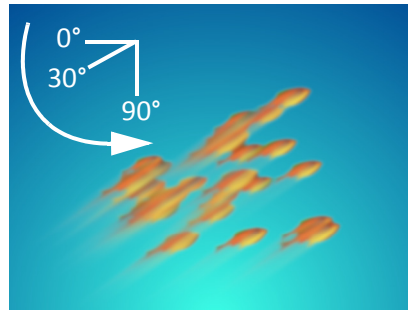
10. Uncheck the Radial check box if you want to create a Motion Blur. The Angle slider will automatically become active. You can still modify the blur intensity with the Radius slider and the angle of the blur with the Angle slider.



Choose a large Radius value, such as 200. You can enter different radius values for the start and end keyframes of your effect to see the blur trail either increase or decrease in length. You can also enter a different Angle value for the start and end keyframes to have the direction of the Motion Blur rotate around the object. Obviously, the Motion Blur will look more natural if you apply this effect to a moving object.



Radius = 200, Angle = 0



Radius = 200, Angle = 30

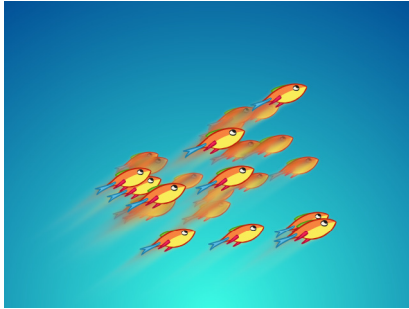
It is important to play with and animate the effect to ensure a convincing result. For example, in this example, the school of fish flip abruptly and start swimming upwards in the opposite direction. Now the 30 degree angle no longer looks good. It would be better to key a new angle at the point of the flip in the Timeline. Also, as the fish slow down before the flip, their motion blur would inevitably shorten, then lengthen again when they speed up.



A trick that you could do is to create a solid version of your object over a blurred version. You can achieve this effect by duplicating the original object. If the object contains multiple drawings and keyframes, then you could



create a template of it in the Library first. Be sure that the timing is aligned in the Timeline, as templates often start at frame 0. Add a Motion Blur to the version lower in the Timeline layer stack.



**NOTE:** The only way to preview the Blur effect is to export a render of your scene. To minimize render time, export only the frames that contain the effect and not the entire scene. For more information on rendering, please refer to Export Movie, on page 441.


## Shake Effect

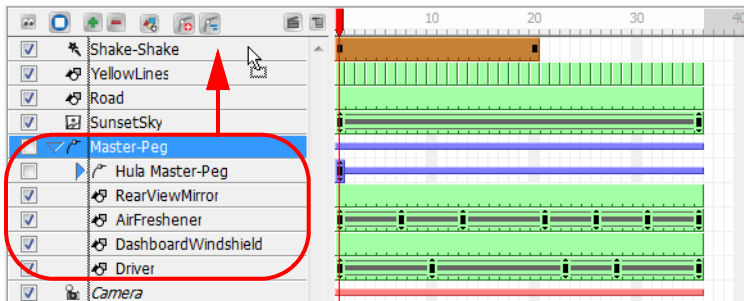


With the Shake effect, an animated drawing or static element, such as a character or landscape, can be made to shake. This effect can be used to imitate earthquakes, camera shakes, or a character who is freezing on a cold winter day.

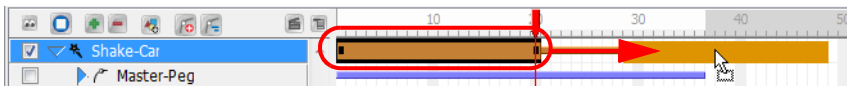
In the image above, the hula girl and air freshener were animated in the cut-out style because their shaking involves rotating from a pivot. However, the entire car, including the dashboard, windshield, hula girl and air freshener, all shake up and down and side to side together, due to the bumps on the road.

### To create a Shake effect:

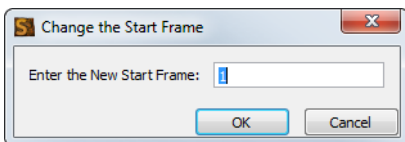
1. In the Effects toolbar, click on the Shake  effect button.
2. In the Timeline view, select the Drawing or Peg layer that you would like to attach to the Shake effect and drag it onto the Shake effect layer.



3. Double-click on your Shake effect layer to rename in accordance with the Drawing or Peg layer that is attached to it. This is good practice, as you may want to add more than one Shake effect to your Timeline. You may want to add more than one Shake effect in order to have a shake occur on the x-axis and another on the y-axis. In order to create different timing sequences, you need multiple versions of the same effect.
4. If you do not want the Shake effect to start at the first frame, you can select the effect's cells and drag them to the starting frame that you prefer.

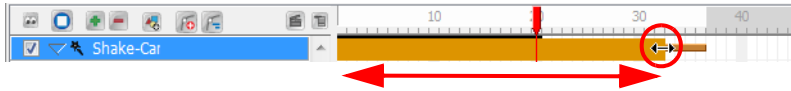


You can also right-click anywhere on the effect's cells and select **Change Start Frame** from the pop-up menu.

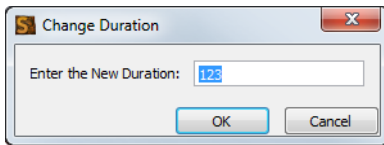


Enter the start frame that you would like into the **Enter the New Start Frame** field and click OK. The entire row of effect cells will be shifted down the Timeline.

- If you want the transition to be shorter or longer, select the end of the group of frames, wait until you get the double arrow cursor and then pull towards the left or right.

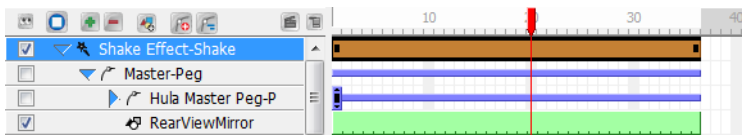


You can also right-click anywhere on the effect's cells and select **Change Duration** from the pop-up menu.

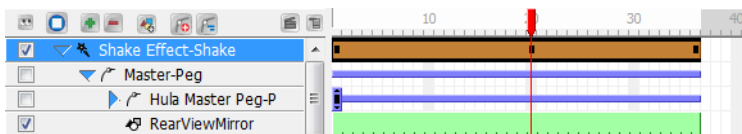


Enter the duration that you would like the effect to last for in the Enter the New Duration field and click OK. The exposure of the effect will be extended or shortened depending on the value entered.

- In the Timeline view, drag the red playhead to a frame on your effect layer where you would like to add a keyframe.

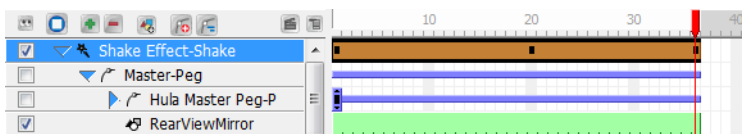


In the Tool Properties panel for the Shake effect, in the Dynamic Parameters tab, click on the Add Keyframe  button.

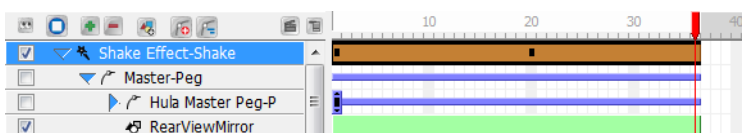


A new keyframe is added to the chosen location.

- In the Timeline view, drag the red playhead to a frame on your effect layer where you would like to delete a keyframe.

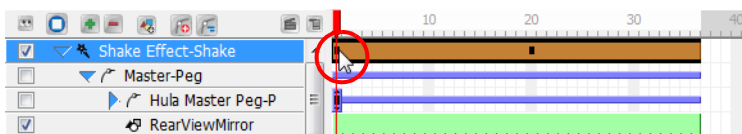


In the Tool Properties panel for the Shake effect, in the Dynamic Parameters tab, click on the Delete Keyframe  button.

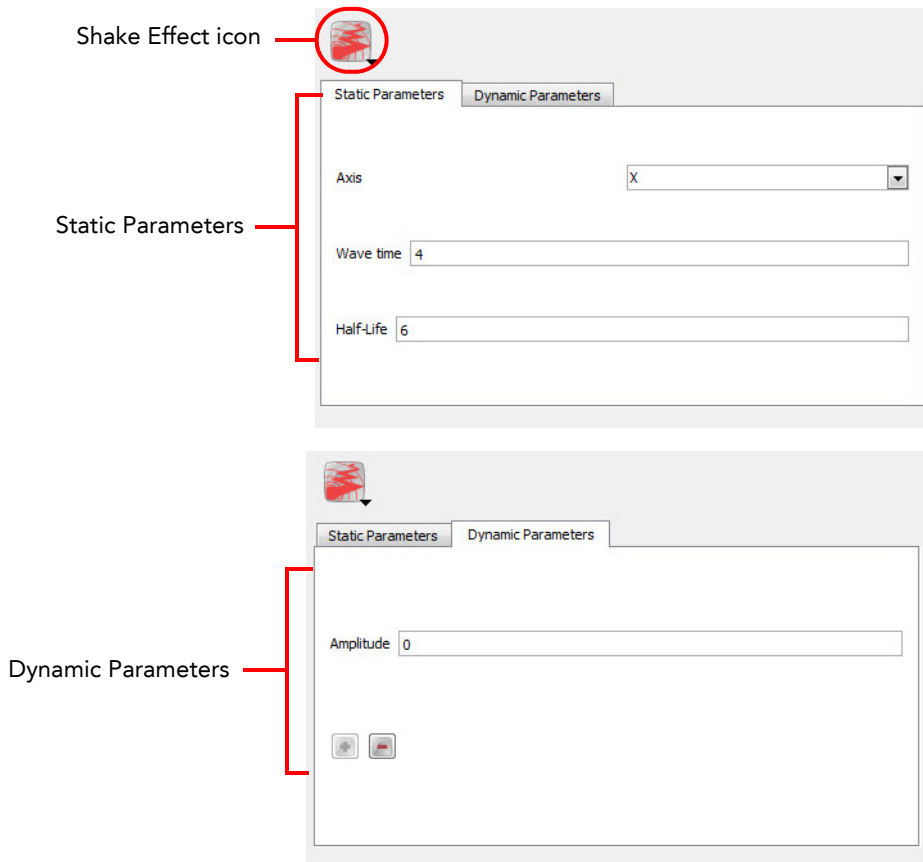


The keyframe is deleted from the chosen location.

- In the Timeline view, go to the frame containing your first keyframe and select the Shake effect layer.



9. In the Properties view, adjust some of the following parameters, according to your preferences.



- ▶ **Shake effect icon** (drop-down menu)
  - ⇒ Mini Shake: Default Amplitude of 0.1
  - ⇒ Great Earthquake: Default Amplitude of 2
- ▶ **Static Parameters**
  - ⇒ **Axis:** Decide whether you would like your object to shake from left to right (X), up and down (Y) or forward and backward (Z). You can parent an x-axis Shake effect, along with its Drawing/Peg layer, to another Shake effect whose Axis is set to Y. This way, your object can shake from both side to side and up and down.
  - ⇒ **Wave Time:** This indicates the length of a cycle. The smaller the number is, the shakier the effect will be, as the effect needs to reach a certain amplitude in a smaller time frame, but could reach this amplitude more often as its cycle length is so short.
  - ⇒ **Half Life:** This refers to the number of frames for the movement to be half its amplitude. If you enter a value of 0 for the half-life, the amplitude will be cut to half right away and the shake will be less intense. If you want to keep the full intensity of the shake for the complete duration of the effect, make the half-life the duration of the Shake effect, that way, the amplitude drops to half when the effect is finished. If you want the shake to gradually taper off, then make the half-life smaller than half the duration (in number of frames) that your shake effect lasts in the Timeline. For example, if your Shake effect lasts for 30 frames, make the half-life less than 15 frames.
- ▶ **Dynamic Parameters**
  - ⇒ **Amplitude:** The maximum displacement from a zero value during one shake cycle. This value is measured in fields.




You can always turn on the 12 x 12 field grid  to gain a better understanding of the system of measurement. Remember that the grid is only visible in the Camera view if both a Drawing layer and a Drawing tool is selected.

## Forces of Nature Effects

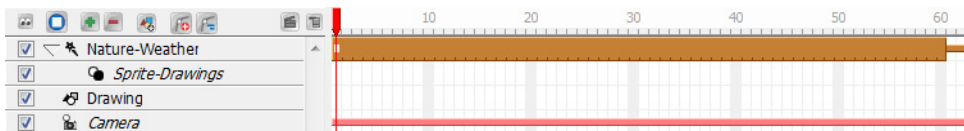
Effects that are the result of natural phenomenon can be among the hardest things to create in an animation, as they involve drawing and animating hundreds of tiny particles or fluctuating organic shapes. Toon Boom Studio helps you bypass this labour-intensive process by providing six Forces of Nature Effects.

- Rain Effect, on page 432
- Snow Effect, on page 433
- Hail Effect, on page 434
- Fog Effect, on page 435
- Cloud Effect, on page 436
- Volcano Effect, on page 437

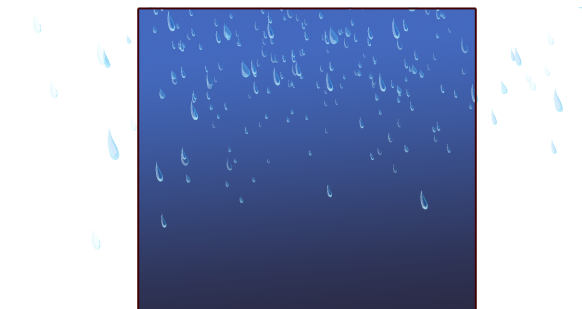
**To add a Forces of Nature effect:**

1. In the Special Effect toolbar, click on the Forces of Nature effect  button.

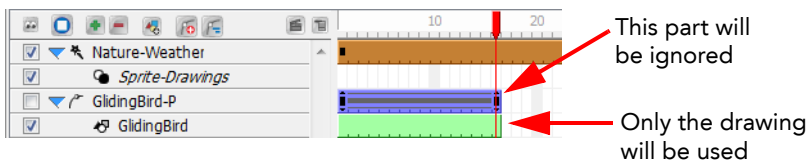
A Forces of Nature effect layer, as well as its child, a Sprite-Drawing layer, is added to the Timeline view. A Sprite is the particle multiplied and generated by the Forces of Nature effect. In the example below, a drawing of a raindrop is being used as the Sprite.



By default, the Rain effect is selected and visible in the Camera view.

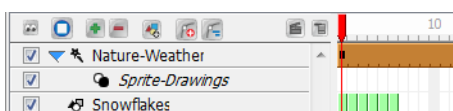


2. Create your own Sprite on a Drawing layer, or import an image to use as a Sprite. In the case of the Forces of Nature effects, Sprites animated using keyframes and/or pegs will lose their animation. Only the original image will be used.

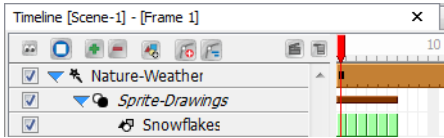


Traditionally animated drawings will be treated as multiple versions of the same particle type. For example, a traditionally drawn walk cycle appears as a series of frames on the same layer. Each frame contains a slightly modified version of a character's legs and arms moving. If this layer were to be used as a Sprite, all those different drawings would be randomized and appear as non-sequential, static, singular particles in the effect.

You can use this behaviour to your advantage; for example, in the event that you want to create five types of snowflakes to be multiplied and generated. Simply create five different drawings on the same layer, but drawing each on their own frame.



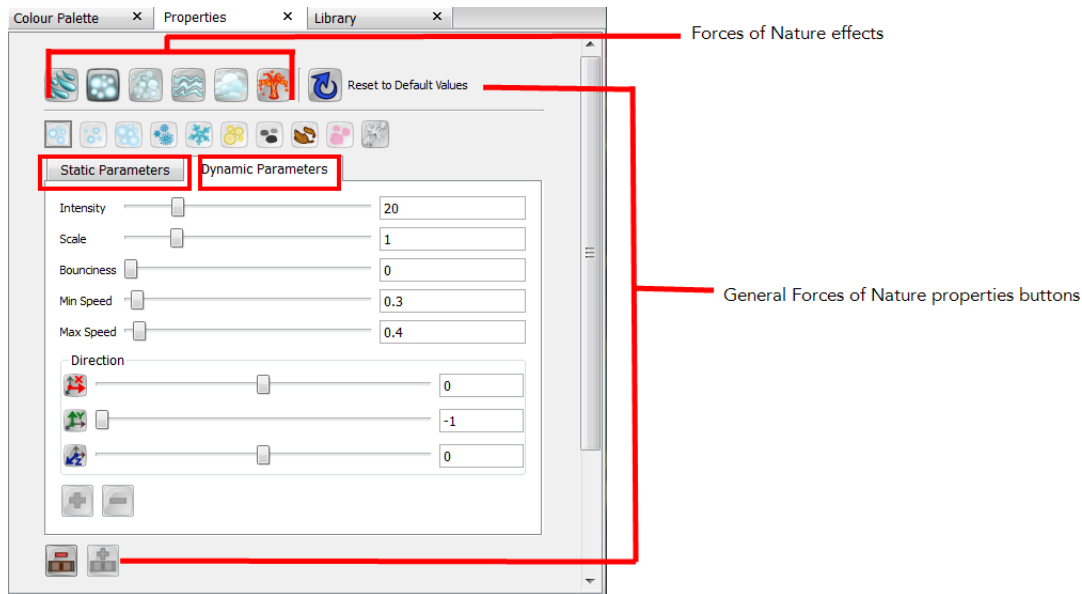
3. Drag your newly created Sprite layer onto the Sprite-Drawings layer to parent it. The Forces of Nature effect Sprite (unseen in the Timeline view) is automatically overridden by your custom Sprite.



If no Sprite is created for a Forces of Nature effect, the default Sprite will be visible.

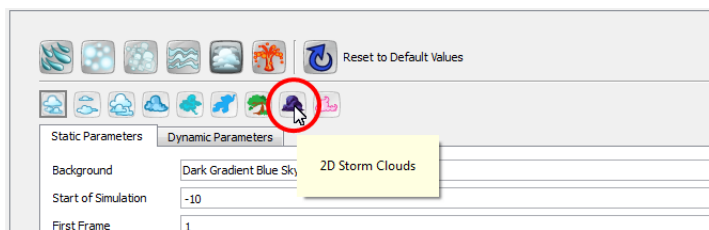
## Customizing Your Forces of Nature Effect

In order to customize and animate your Forces of Nature effect, you have to adjust the parameters in the Properties panel. Use the Static Parameters to customize the general settings for the effect. Any frame of the effect layer can be selected in the Timeline view when modifying values in this tab. If you want to animate the properties of the effect, add keyframes accordingly, then change the keyframe values in the Dynamic Parameters tab.



## Forces of Nature Effects

From the top row of icons, click on the button corresponding to the Forces of Nature effect that you wish to use. It will turn dark grey to indicate that it is selected. If you are unsure as to which Forces of Nature effect is depicted on a given button, use your mouse to hover over the button in order to make its name appear in the tool tip.



The Forces of Nature effect will change in the Camera view depending on which effect you choose. Click on the effect you wish to use; the corresponding sub-menu appears, featuring the various effect options that fall under that particular Forces of Nature effect.

In the above example, **Cloud** is the general option that has been selected. Every effect has a sub-menu featuring numerous options, ones that vary in density, shape and character. To determine what each effect does, hover your mouse over the effect icon. The tool tip appears, indicating the name of this particular effect. To activate the effect, click on the icon. A dark grey box surrounds the icon, indicating that it is activated.

The six different Nature effects are discussed in more detail in their own individual sections below.

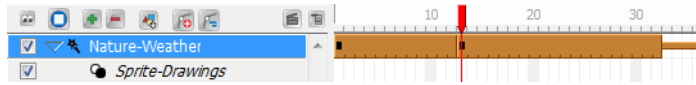
## General Forces of Nature Properties Buttons



**Reset to Default Values:** After you have made adjustments to the parameters in either the Static or Dynamic Parameters tab, click on this button to reset the default values in both tabs.



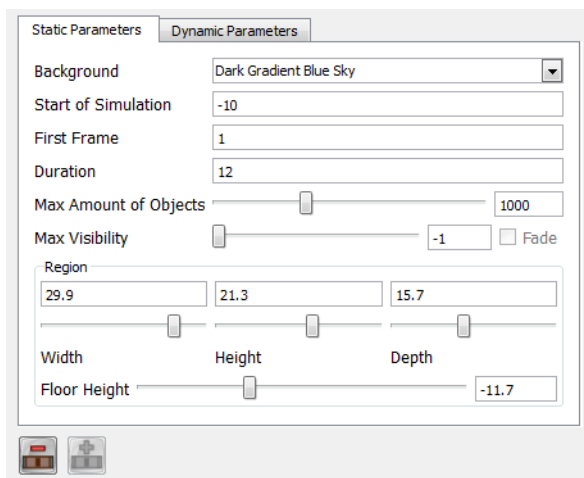
**Add Fill:** Use this button to divide a Forces of Nature effect in the Timeline. Once divided, a different Forces of Nature effect can be applied to one of the two halves. Fundamentally, this allows for two different effects to exist on the same layer in the Timeline.



**Delete Fill:** Use this button to delete all the cells of a single Forces of Nature effect, in a layer where multiple effects exist.



## Static Parameters Tab



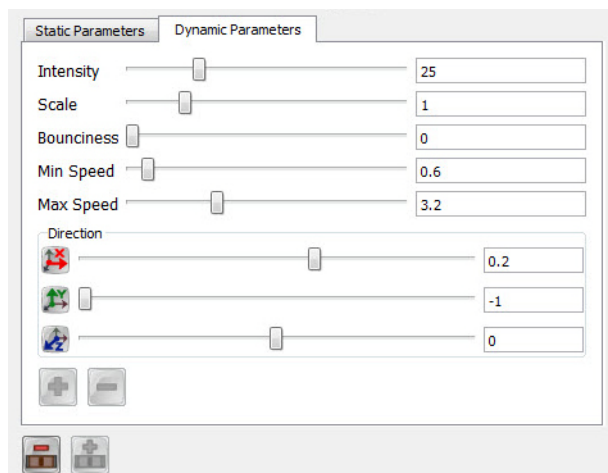
- **Background:** Use the drop-down to choose from one of three background colour options: Dark Gradient Blue Sky, Light Gradient Blue Sky, or Transparent.
- **Start of Simulation:** The frame number of where you would like the generation of particles to start. If you would like the effect to be in progress beginning at the start of your scene, keep the default value of -1. This number is relative to the First Frame value.
- **First Frame:** The frame number where you would like the effect to start. You could have your effect start on frame 20, but not have the particle generation start until four frames in.
- **Duration:** The number of frames that you would like the effect to last.
- **Max Amount of Objects:** The maximum number of particles (copy of the sprite) that can be generated at one time in the Camera view. These particles are not all created at the same time, but will eventually fill the Camera view with their number. For example, if a value of 2 is entered, then only two particles will be generated until they disappear from the Camera view (finish their lifespan). At that time, another two or less particles can be generated to replace the two that disappeared from view.
- **Max Visibility:** The maximum number of frames that a particle will exist for in the Camera view, otherwise known as the particle life span. For example, even if the Max Amount of Objects is set to 3000, if the Max Visibility is set to 10, then most particles will disappear before anywhere near 3000 particles can be




created. In addition, if it takes 60 frames for a particle to fall from sky to ground, then most of these particles will never touch the ground, as they will “die” or disappear before the 10th frame.

- **Fade:** Check this box if you would like the particles to slowly fade-out as they reach the end of their life span instead of disappearing abruptly.
- **Region:** Think of the region where the particles are generated, live and die as a 3D cube. Use the sliders to select a value between 0-36 for the Width, Height and Depth of this 3D region. Although you cannot see the depth of the region, you may notice that some particles appear larger or smaller than others, even though they are all generated from the same sprite. This is because some are closer or further back in depth.
- **Floor Height:** The value in this field represents the height of an invisible floor. This floor is where the simulation ends. With the example of snow, if you would like to see snow hitting and covering the ground, you would raise the height of the floor to be visible in the Camera view.



## Dynamic Parameters Tab

The parameters in this tab only become active when a frame with a keyframe is selected in the Timeline view.



- **Intensity:** This value determines the strength of the simulation. For example, if the first keyframe has an Intensity of 1 and the second keyframe has an Intensity of 25, then only a few particles will be produced at the start of the animation, producing progressively more and more.
- **Scale:** This value determines the size of the particles as a percentage. For example, a value of 1.5 would be 1.5 times the size of the original particle or Sprite. Remember that all the particles are the same size; it is just that some are further back or closer in space.
- **Bounciness:** This value determines the height of a particle’s bounce, or in other words, how bouncy the particle is. The greater the value, the higher the bounce, hence the more bouncy the particle. This parameter is important for the Hail effect.
- **Min Speed:** The minimum speed at which the particles can move.
- **Max Speed:** The maximum speed at which the particles can move.
- **Direction:** These parameters can be used to push the particle movement at an angle, giving the illusion that they are being blown in a certain direction by the wind. Use the sliders in this section to manipulate the following:
  -  East-West: direction along the x-axis
  -  North-South: direction along the y-axis
  -  Back-Front: direction along the z-axis



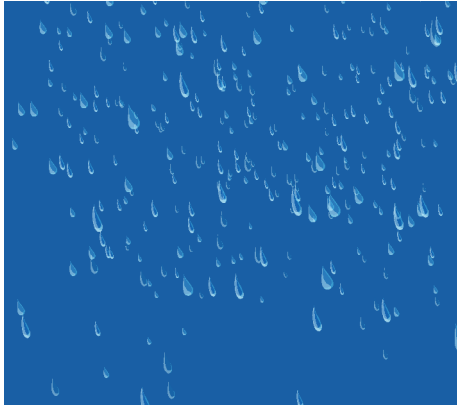
- You can use both positive and negative values, as well as decimal increments. **Add Keframe** : Use this button to add a keyframe on the Forces of Nature layer in the Timeline view. The keyframe will be added to whichever frame is selected in the Timeline view, indicated by the position of the red playhead. Once the keyframe is created, modify the values in the Dynamic Parameters tab to have those parameters recorded in the keyframe.
- **Delete Keyframe** : Use this button to delete a selected keyframe from the Forces of Nature layer in the Timeline view.

## Moving an Effect in the Camera View

In order to move an effect in the camera or to give an effect a trajectory, you must attach a peg layer to it. Refer to the following chapter to learn more about moving an effect:

- Scene Setup - Creating a Motion Path, on page 366

## Rain Effect

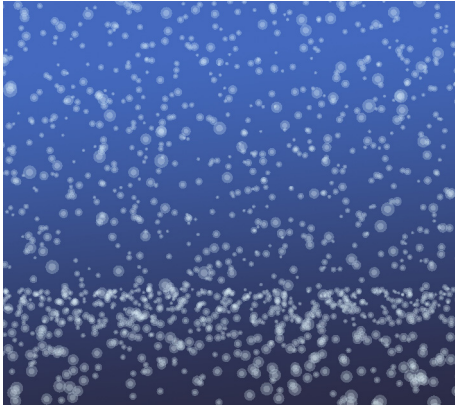


The Rain effect produces a simulation of water droplets falling from the sky in nine various presets:

- Rain - this is the default setting
- Tropical Storm - the rain drops are bigger and greater in number, thereby producing a more intense effect
- Mist - the rain drops are smaller and fewer, thereby producing a less intense effect
- Straight - the rain falls on a diagonal, suggesting a driving rain shower
- Bubble - the rain falls in large, rounded drops of water
- Droplets - the rain falls in droplets of water
- Gummy Bears - a sweet shower of red and yellow gummy bears
- Rays - sun rays caught by particles of light illuminate your scene
- Stars - your scene is showered by stars, both near and far

Parameters such as Bounciness and Floor Height are less applicable to this effect. However, Max Amount of Objects and Direction are good parameters to modify and animate for the Rain effect.

## Snow Effect

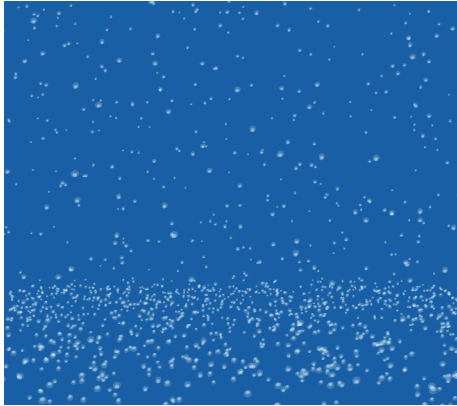


The Snow effect produces a simulation of snowflakes falling from the sky in ten various presets:

- Snow - this is the default setting
- Snow Flurries - fewer snowflakes produced than with snow, therefore creating a less intense effect
- Snow Storm - the snowflakes are bigger, falling faster and are greater in number, thereby creating a more intense effect
- Simple Snowflakes - these are soft, light “paper cut-out” snowflakes
- Shiny Snowflakes - large, shiny snowflakes, great for an icy winter scene
- Sun Dust - soft snow raised by a gust of wind and lit by a bright winter’s sun
- Ashes - light ashes fall, gently filling your scene
- Leaves - brown, last-to-fall autumn leaves float gently downwards
- Cotton Candy - fluffy pink cotton candy for a sweet, playful scene
- Dandelion Puffs - fluffy dandelions, ideal for lazy summer scenes and making wishes

In the case of the Snow Effect, the Floor Height can play a role as snow can land and accumulate on the ground. While Bounciness does little to change this effect, as it is not a natural property of snow, the Intensity and Min Speed can make the difference between Snow Flurries and a Snow Storm. If you are looking to produce an effect where the snow melts before it hits the ground, you can lower the Floor Height so that it is not visible in the Camera, as well as check off the Fade box to have your snowflakes lightly melt away.

## Hail Effect



The Hail effect produces a simulation of ice pellets falling from the sky in nine various presets:

- Hail - this is the default setting
- Light Hail - there are fewer ice pellets produced, thereby creating a less intense effect
- Hail Storm - the ice pellets are bigger, falling faster and in greater in number, thereby creating a more intense effect
- Crystallized Hail - sparse, gentle flecks of crystal fall steadily throughout your scene
- Baseball Hail - heavy, large, quick-falling hailstones, to be avoided by all windshields
- Diamonds - a different kind of ice, these yellow, pink and blue diamonds fall hard and fast
- Candy - colourful bonbons populate your scene to create a candyland effect
- Coins - bright pennies (and more) from heaven enrich your scene with a little fun
- Gears - rust, gold and grey gears tumble from top to bottom; great for gear heads

In the case of the Hail Effect, the Floor Height and Bounciness play a big role in identifying the effect, as ice pellets bounce when they hit a surface or ground. Subtle differences in the Dynamic Parameters values determine the difference between a Light Hail and a Hail Storm, as well as the Max Amount of Objects and Max Visibility values.

## Fog Effect



The Fog effect produces a simulation of a gaseous vapour hanging in the air in nine various presets:

- Fog - this is the default setting
- Misty - there are fewer particles produced in a smaller region, thereby creating a less intense effect
- Thick Fog - There are a greater number of particles in a larger region, thereby creating a more intense effect
- Curly Fog - a cluster of fog tendrils floats and expands to cover the majority of your scene
- Smokey Fog - a dark fog that expands ominously across your scene
- Sumi-e Fog - in various shades of grey, this fog has a classic Japanese ink wash sensibility
- Balloons - red, yellow and blue balloons radiate, then float, from the center of your scene
- Fireflies - glowing green fireflies evoke a balmy summer evening
- Bushes - a row of lush bushes rises, gently expanding and rustling, from the bottom of the screen

The Region dimensions, including the Floor Height, plays a role in the intensity of this effect. The smaller the region, the less intense the effect, as we are able to see some sky in the background. The Max Amount of Objects contributes to the fog's density, which can also make it more, or less intense. It is recommended that you really explore the parameters for this effect, as they are a little less obvious than for the other effects.

## Cloud Effect

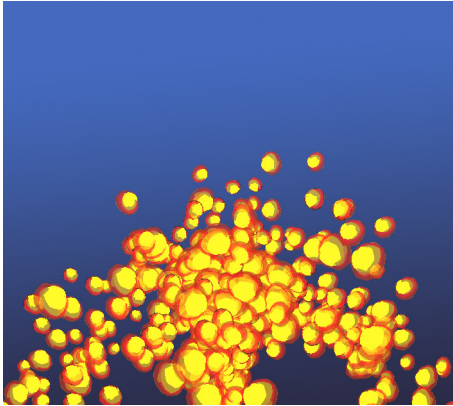


The Cloud effect produces a simulation of a condensed gaseous vapour floating through the sky in nine various presets:

- Cloud - this is the default setting
- Fluffy Clouds - there are fewer particles produced, with lower visibility at a slower speed, thereby creating a less intense effect
- Storm Clouds - there are a greater number of particles produced, with higher visibility, thereby creating a more intense effect
- 2D Puffy Clouds - dense fairweather clouds in various shades of blue
- 2D Stylized Clouds - swirling, curly-Q clouds in shades of blue and cafe au lait
- Shape Clouds - fluffy clouds in the shape of a duck , a dragon and an elephant. Perfect for daydreaming
- Forest - a dense forest of trees and foliage sweeps through your scene
- 2D Storm Clouds - enormous, ominous clouds sweep past, filling your scene from front to back
- Candy Clouds - swirling clouds in shades of candy pink

The Cloud effect is one of the most complicated Forces of Nature effects, due to the number of parameters that need to be adjusted in order to make both subtle and dramatic differences to this effect. Some of the key parameters to look out for are Start of Simulation, Max Amount of Objects, Max Visibility (including Fade), as well as Intensity and Speed.

## Volcano Effect



The Volcano effect produces a simulation of flowing lava bubbles from a single source in nine various presets:

- Volcano - this is the default setting
- Puff - there are fewer particles produced, with a lower intensity, thereby creating a less intense effect
- Volcano Eruption - there are a greater number of particles produced, with higher intensity, thereby creating a more intense effect
- Deformed Lava - lava flows, radiating outward towards the floor of your scene
- Popcorn - popped kernels of corn bubble from the center of your scene
- Petroleum - dark petroleum gushes and oozes outward from the center of your scene
- Fountain - a fountain of water emanates up and out in a wash of blues
- Colour Candy - pink, gold and blue candies spring up and out for a visual sugar rush
- Steam - droplets of steam and wispy vapour rise from the bottom of your scene, emanating outwards

The Volcano effect is a unique effect in that it is the only effect that is produced from a single source. You can move the position of the source by changing the value of the Floor Height. The number of particles (Max Amount of Objects), as well as the size of the particles (Scale) are important factors. The Start of Simulation value will determine whether you see the lava erupt from the source (either 0, or a positive value), or if it will already be flowing when the scene starts.

## Disabling All Effects

You can disable all the effects in your scene in order to preview it without them. Doing so will hide all effects from the Camera view, but the effects elements will remain visible in the Timeline view.

### To disable all effects:

1. Select **View > Disable All Effects** from the top menu.

Once you have disabled the effects in your scene, you can easily re-enable them.

### To enable all effects:

1. Select **View > Enable All Effects** from the top menu.



*Your project will be exported with the effects visible, regardless if the Disable All Effects option is on.*



## What's Next?

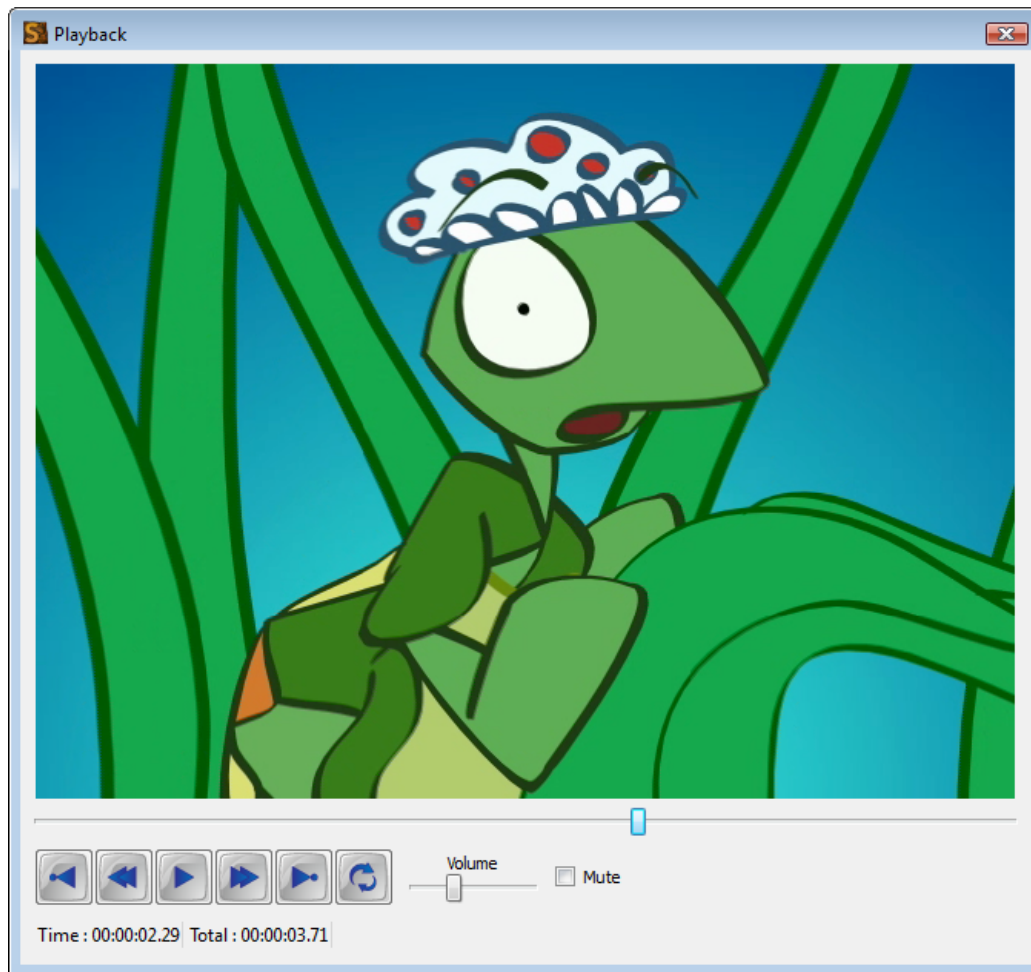
So far, you have learned about:

- Clipping Effect
- Feather Edge Effect
- Drop Shadow Effect
- Colour Transform Effect
- Shake Effect
- Rain Effect
- Snow Effect
- Hail Effect
- Fog Effect
- Cloud Effect
- Volcano Effect

It is now time to learn about exporting your project to a movie or image sequence format.



# Chapter 16 Exporting Your Project



Toon Boom Studio supports several formats for all your rendering needs, it all depends on what you want to do with your final output. You could, for instance, create a flip book or produce a video to post directly to the Web or iPod.

In this chapter, you will learn how to do the following:

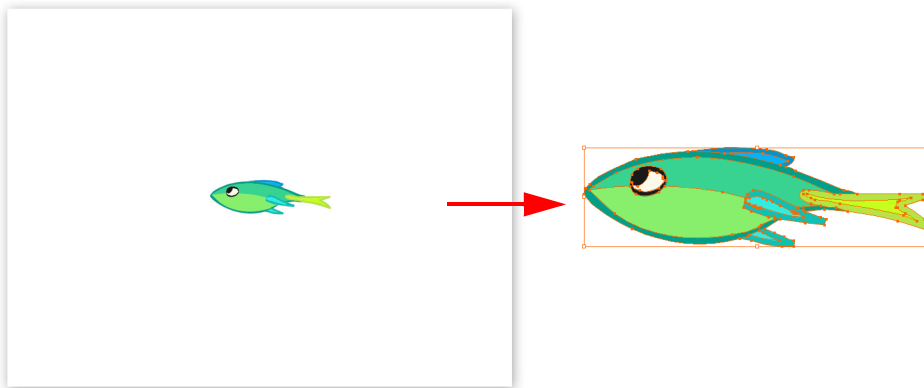
- Export Drawing to PDF, on page 442
- Export Movie, on page 443
- Export to YouTube and Facebook, on page 445
- Export Snapshot, on page 450
- Print, on page 451

## Export Drawing to PDF

Exporting one frame of your animation to PDF can be of use if you need a vector-based image from your movie.

### To export a drawing to PDF:

1. Select the frame of your project that you would like to render. It must be from a drawing (vector based) layer and not an image (bitmap) layer.
2. From the top menu select **File > Export Drawing to PDF**.  
The Save As dialog box appears.
3. Browse to the location where you would like to save your file.
4. In the File name field, enter a name for your file.
5. Click on the Save button.
6. Browse to the location where you saved your file and double-click on it to view the results. You may also choose to open this file in a vector-based, third-party software, such as Adobe Illustrator.



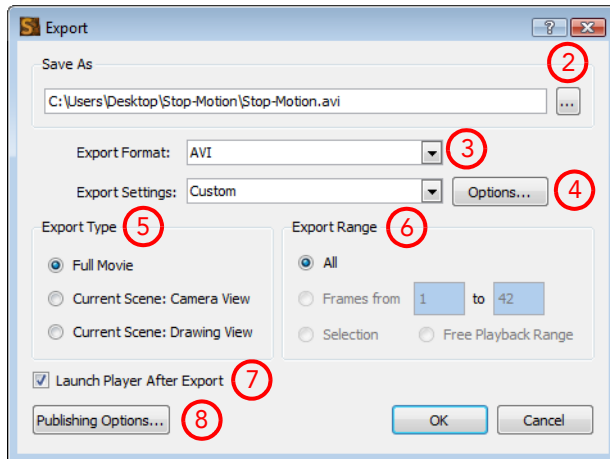
## Export Movie

The format and settings that you decide upon when wanting to export your animation often depends on what you intend to do with it next. Do you plan to bring your project into a third-party software for post-production editing or put it up on the web?

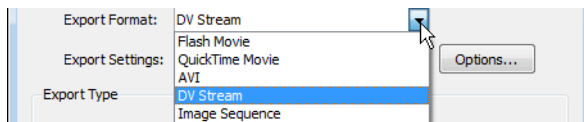
**To export your movie:**

1. From the top menu select **File > Export to Movie**.

The Export dialog box appears.



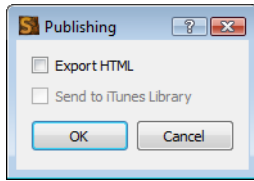
2. In the Save As section, click on the Browse button at the end of the path field and browse for the location where you intend to save your rendering.
3. In the **Export Format** drop-down menu, select the format that you desire. The Export Settings Options will change depending on the format selected from this section.



4. Click on the Options button to customize the format settings.
5. In the Export Type section, choose from the following options:
  - ▶ **Full Movie**: Renders out all scenes and all layers that are enabled, from the first to last frame, including all effects.
  - ▶ **Current Scene: Camera View** - renders out all layers that are enabled in that specific scene that can be seen in the Camera view with the option to choose a frame range.
  - ▶ **Current Scene: Drawing View** - renders only what exists on a single layer in that specific scene. This can be a good option for running tests on a specific character or object's motion, or to bring one animated element into a third party software.
6. From the Export Range Section, choose from the following options:
  - ▶ **All** - renders out your entire project.
  - ▶ **Frame Range** - allows you to select a specific section of your project to render by frame number.
  - ▶ **Selector** - renders out whichever layer or element that you selected prior to launching the export process.
  - ▶ **Free Playback Range** - in the Timeline view, right-click on the timeline ruler (top) and from the pop-up menu select **Playback Range > Free**. Two black diamonds should appear at the start and finish of your project. Drag these markers to select the range that you desire.
7. Check or uncheck the Launch Player After Export option.

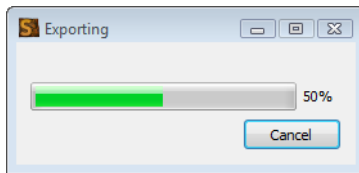
8. Click on the Publishing Options button.

The Publishing dialog box appears.



9. From the Publishing dialog box, select the option to Export to HTML if your project is destined for the web and/or if you would like to send a copy to your iTunes Library.
10. When you are finished, click OK.
11. In the Export dialog box, when you are through, click OK.

A progress bar appears.



12. Browse to the location on your computer where you saved your movie and double-click on the file to view your export.

## Export to YouTube and Facebook



Toon Boom Studio simplifies the upload of your animated projects to these two popular websites: YouTube and Facebook. Using the Export Movie command, you can choose an option to export your movie directly to one of these sites. Toon Boom Studio will then automatically redirect you to your YouTube or Facebook profile where your video will automatically be uploaded.

**NOTE:** You require an active account on YouTube or Facebook before you can upload your videos.

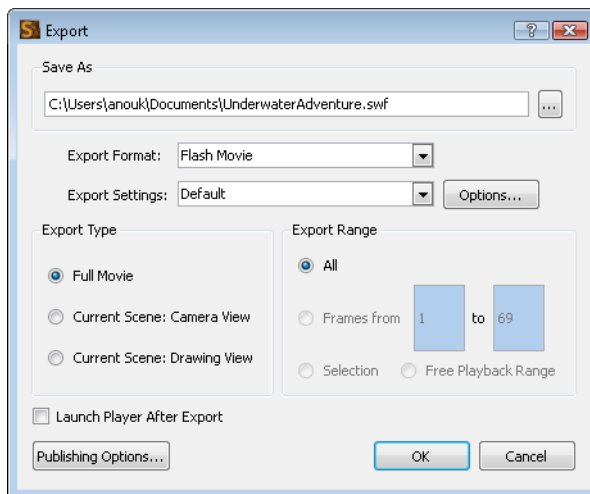
### Exporting to YouTube

To be able to export your movie to YouTube, you will first need to have a YouTube account. If you do not already have one, you can go to [www.youtube.com](http://www.youtube.com) to create your own.

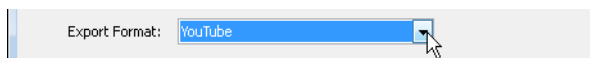
**To export your movie to your YouTube account:**

1. From the top menu select **File > Export to Movie**.

The **Export** dialog box appears.



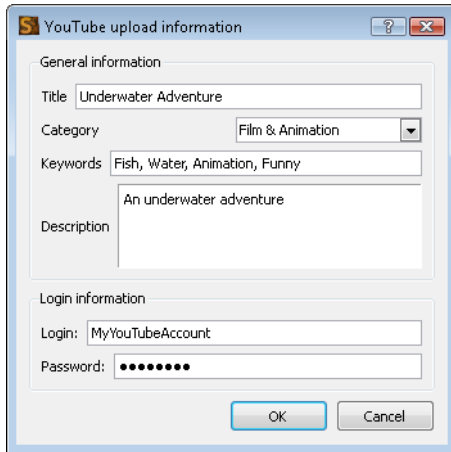
2. In the Save As section, click on the Browse button at the end of the path field and browse for the location where your render will be saved.
3. In the **Export Format** drop-down menu, select YouTube. Doing so will grey out certain options.



4. In the Export Type section, choose from the following options:
  - ▶ **Full Movie** - Renders out all scenes and all layers that are enabled, from the first to last frame, including all effects.
  - ▶ **Current Scene: Camera View** - Renders out all layers that are enabled in that specific scene that can be seen in the Camera view with the option to choose a frame range.
  - ▶ **Current Scene: Drawing View** - Renders only what exists on a single layer in that specific scene.

5. From the Export Range Section, choose from the following options:
  - ▶ **All** - Renders out your entire project.
  - ▶ **Frame Range** - Allows you to select a specific section of your project to render by frame number.
  - ▶ **Selector** - Renders out whichever layer or element that you selected prior to launching the export process.
  - ▶ **Free Playback Range** - In the Timeline view, right-click on the timeline ruler (top) and from the pop-up menu select **Playback Range > Free**. Two black diamonds should appear at the start and finish of your project. Drag these markers to select the range that you desire.
6. When you are finished, click OK.

A progress bar appears, showing you the rendering process, followed by the **YouTube upload information** dialog box.



7. Fill in the information.
  - **General Information**

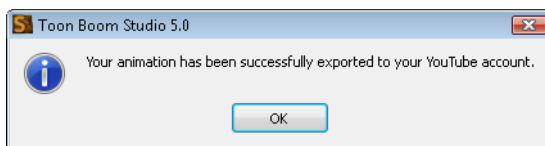
The informations that will appear on your YouTube account.

    - ⇒ Title: Type in the name of your video
    - ⇒ Category: Use the drop-down menu to select the category that best fits your video.
    - ⇒ Description: Type in a description of your video.
  - **Login Information**

Fill in this information to automatically login to your YouTube account.

    - ⇒ Login: Type in your YouTube account username.
    - ⇒ Password: Type in your YouTube account password.
8. Click on the OK button.

A progress bar appears, showing you the uploading process, followed by a dialog box notifying you that your video has been successfully uploaded.



9. Click on the OK button.



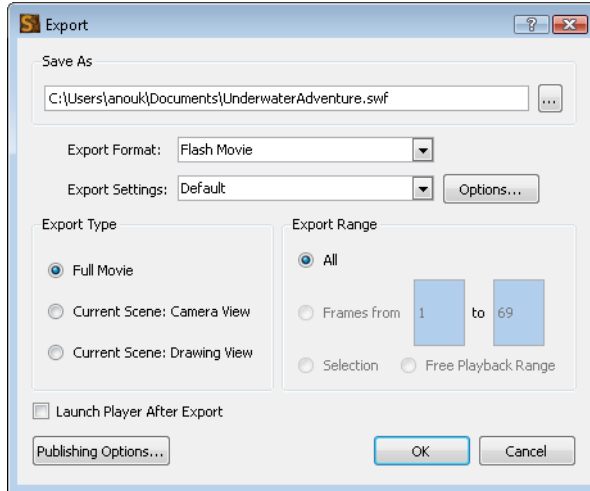
## Exporting to Facebook

To export your movie to Facebook, you will first need to have a Facebook profile. If you do not already have one, go to [www.facebook.com](http://www.facebook.com) to create your own. Once it is done, you can now start to upload your creations to your profile to share with your friends on Facebook.

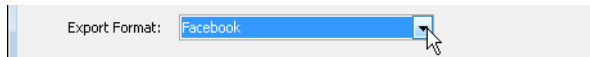
**To export your movie to your Facebook profile:**

1. From the top menu select **File > Export to Movie**.

The **Export** dialog box appears.

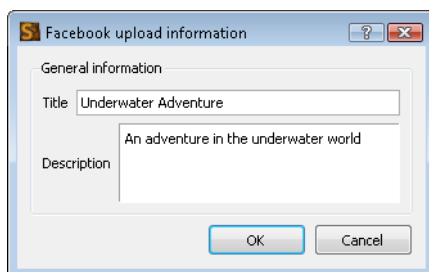


2. In the **Save As** section, click on the **Browse** button at the end of the path field and browse for the location where your render will be saved.
3. In the **Export Format** drop-down menu, select **Facebook**. Doing so will grey out certain options.



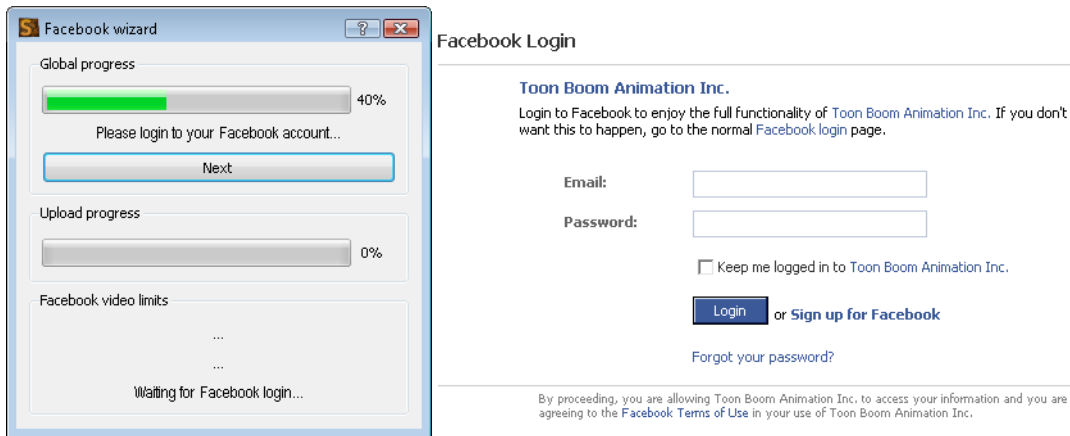
4. In the **Export Type** section, choose from the following options:
  - ▶ **Full Movie** - Renders out all scenes and all layers that are enabled, from the first to last frame, including all effects.
  - ▶ **Current Scene: Camera View** - Renders out all layers that are enabled in that specific scene that can be seen in the Camera view with the option to choose a frame range.
  - ▶ **Current Scene: Drawing View** - Renders only what exists on a single layer in that specific scene.
5. From the **Export Range** Section, choose from the following options:
  - ▶ **All** - Renders out your entire project.
  - ▶ **Frame Range** - Allows you to select a specific section of your project to render by frame number.
  - ▶ **Selector** - Renders out whichever layer or element that you selected prior to launching the export process.
  - ▶ **Free Playback Range** - In the Timeline view, right-click on the timeline ruler (top) and from the pop-up menu select **Playback Range > Free**. Two black diamonds should appear at the start and finish of your project. Drag these markers to select the range that you desire.
6. When you are finished, click **OK**.

A progress bar appears, showing you the rendering process, followed by the **Facebook upload information** dialog box.



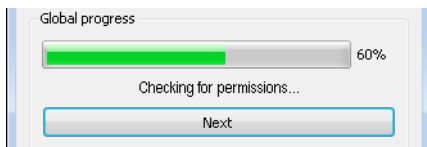
7. Fill in the information that will appear on your Facebook account.
  - Title: Type in the name of your video
  - Description: Type in a description of your video.
8. Click on the OK button.

The **Facebook wizard** dialog box opens and your internet browser is launched and automatically directed on the Facebook login page.

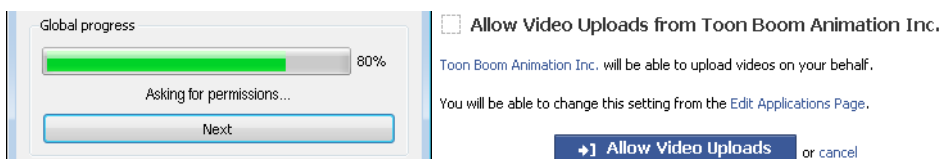


9. In your internet browser, log in to your Facebook account.  
NOTE: Although you are not on the Facebook website you are now logged in to Facebook. To logout you will need to go onto your account on the Facebook website.
10. In the Facebook wizard, click on the Next button.

The **Facebook wizard** checks for permissions.



11. The first time you go through these steps, when the Facebook wizard will ask for permissions, the internet browser will automatically be directed to the Facebook confirmation page, where you will need to give your authorization.  
The next time you will export a video to your Facebook account, the wizard will automatically continue to upload the video to your account.



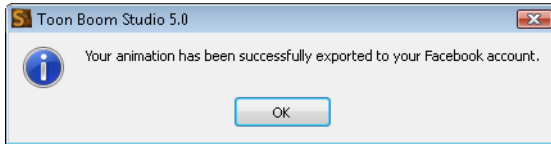
- In the Internet browser, click on the Allow Video Uploads button.  
The Facebook page notifies you that the permissions have been saved.



You may now close this window.

- In the Facebook wizard dialog box, click on the Next button.

The wizard finishes the upload and a dialog box opens notifying you that your video has been successfully uploaded



12. Click on the OK button.

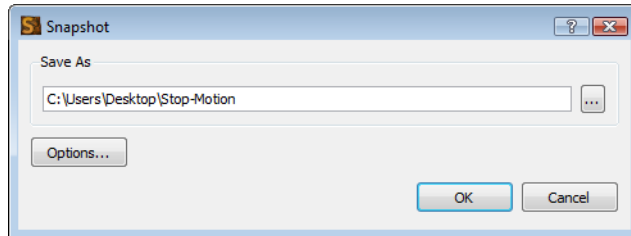
## Export Snapshot

Sometimes you might find that you would like to digitally save one specific shot of your animation, perhaps rough sketches for your workflow or a polished scene for promotional purposes. The best way to produce this render is by exporting a snapshot.

### To export a snapshot:

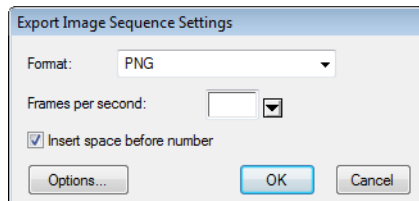
1. In the Timeline view, select the location in your animation where you are able to frame the image that you would like to render perfectly in the Camera view.
2. From the top menu, select **File > Export Snapshot**.

The Snapshot dialog box appears.



3. From the Snapshot dialog box, browse to the location on your computer where you would like to save your work and rename your image accordingly.
4. Click on the Save button.
5. In the Snapshot dialog box, click on the Options button.

The Export Image Sequence Settings dialog box appears.



This is the same dialog box that would appear if you were rendering an Image Sequence through the Export Movie process, however only the format option applies in this case as you are only rendering one image.

6. From the Format drop-down menu, select the format type.
7. Click OK.
8. Browse to the location on your computer where you saved your snapshot and double-click to view it.

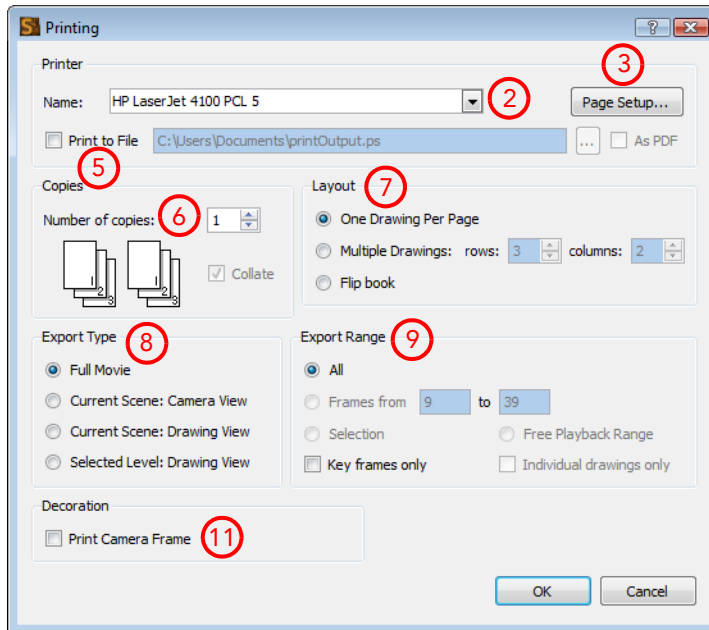
## Print

Although there are many reasons why you might want to print out part or all of your finished or unfinished animation, such as for a model sheet or storyboarding, a fun project you could make with this feature is a flip book.

### To print a flip book or a from your project:

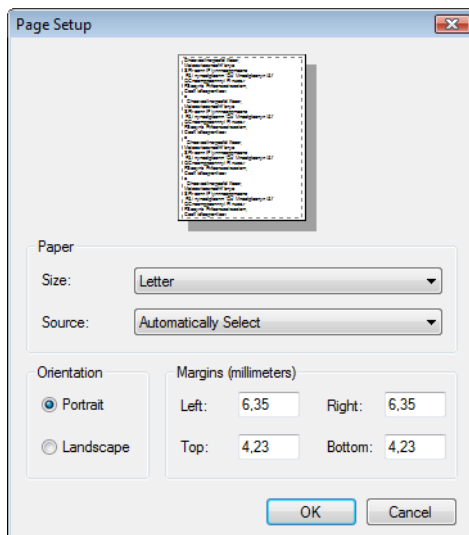
1. From the top menu, select **File > Print**.

The Printing dialog box appears.



2. From the Printer section, look through the Name list to select a printer which is connected to your computer.
3. Click on the Page Setup button.

The Page Setup dialog box appears.



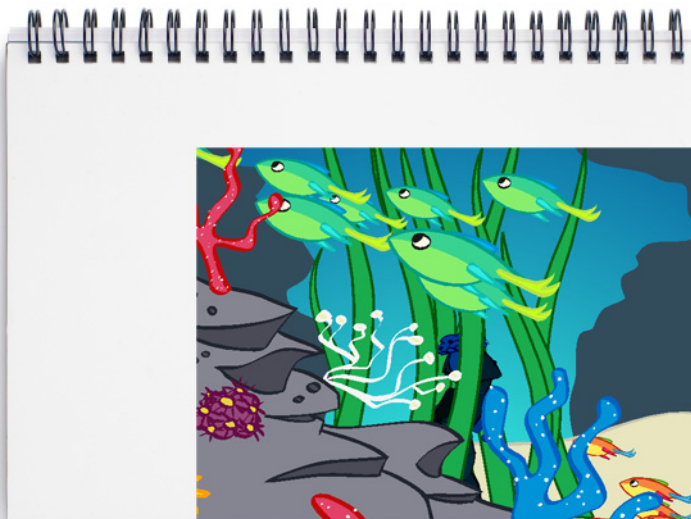
4. Customize your page setup and then click on the OK button.
5. In the Printer section, if you want to print your file digitally and have it saved somewhere on your computer, select the Print to File option and browse to the location where you would like to save this file on your computer. Select the As PDF if you so desire.

As you want to print a flip book, do not select this section.

6. In the Copies section, select the number of copies of each individual page from the drop-down. For example, if you chose the number two, the printer will print two copies of page 1, two copies of page 2, etc.

7. In the Layout section, decide how many frames you would like per page. Selecting the Flip book option will automatically place either 6 to 8 frames per page and leave a margin for binding purposes. Once the images will be printed, you will have to cut your images to create your flip book. If you put only one image per page, it will be difficult to quickly flip through the drawings as the pages will be too big to handle. Smaller sheets are much easier to flip.
8. In the Export Type section, decide on one of the following options:
  - ▶ **Full Movie** - by default prints the entire frame range of your project, including all scenes and all enabled layers.
  - ▶ **Current Scene: Camera View** - prints all elements, from all enabled layers, for a specific scene, including all transformations visible in the Camera view and allows for the selection of a frame range.
  - ▶ **Current Scene: Drawing View** - prints all elements on a selected layer visible through the Drawing view, as well as other layers visible with the aid of the Light Table tool.
  - ▶ **Selected Level: Drawing View** - prints all elements on only one selected layer and offers the option of printing individual drawings only.
9. In the Export Range section, decide on one of the following options:
  - ▶ **All** - renders out your entire project.
  - ▶ **Frame Range** - allows you to select a specific section of your project to render by frame number.
  - ▶ **Selector** - renders out whichever layer or element that you selected prior to launching the printing process.
  - ▶ **Free Playback Range** - in the Timeline view, right-click on the timeline ruler (top) and from the pop-up menu select **Playback Range > Free**. Two black diamonds should appear at the start and finish of your project. Drag these markers to select the range that you desire.
10. In the same section, decide on one, both or none of the following options:
  - ▶ **Keyframes only** - prints out drawings on a frame with a keyframe in the Timeline view.
  - ▶ **Individual drawings only** - prints out the first instance of a drawing. For example, if a drawing on a cell or frame is extended for 10 exposures in either the Xsheet or Timeline view, these extended exposures will not be printed. In other words, you will receive only one printout of this drawing instead of ten.
11. From the Decoration section, decide whether or not you would like to select the Print Camera Frame option.
12. Click on the OK button.

You now have a frame-by-frame printed copy of your animation that is ready to be cut and bound into a flip book.



# Keyboard Shortcuts for Toon Boom Studio 7.1

This document lists the default keyboard shortcuts for Toon Boom Studio 7.1. To use a shortcut, press the key(s) and the character simultaneously. The “+” sign, is not part of the sequence.

**NOTE:** Commands without shortcuts are left blank in these tables

**NOTE:** The **Custom** column is provided so you may write down the shortcuts which you customize.

In Toon Boom Studio you can create your own keyboard shortcuts.

To assign your own keyboard shortcuts, select **Edit > Preferences > Shortcuts** from (Windows) or Toon Boom Studio (Mac OS X).

COMMAND	WINDOWS	MAC OS X	CUSTOM
Centre on Mouse	N	N	
Next Drawing	Shift+S	Shift+S	
Next Element	F	F	
Next Element in X-Sheet	Shift+F	Shift+F	
Next Frame	S	S	
Previous Drawing	Shift+A	Shift+A	
Previous Element	D	D	
Previous Element in X-Sheet	Shift+D	Shift+D	
Previous Frame	A	A	
Select Skeleton Root	Y	Y	

## EDIT MENU

COMMAND	WINDOWS	MAC OS X	CUSTOM
Copy	Ctrl+C	Command+C	
Cut	Ctrl+X	Command+X	
Cut Special	Ctrl+Shift+X	Command+Shift+X	
Delete	Delete	Delete	
Deselect All	Ctrl+Shift+A	Command+Shift+A	
Paste	Ctrl+V	Command+V	
Paste New Object	Ctrl+Shift+V	Command+O	
Paste Special	Ctrl+B	Command+S	
Paste Special Again	Ctrl+Shift+B	Command+Shift+B	
Redo	Ctrl+Shift+Z	Command+Shift+Z	
Select All	Ctrl+A	Command+A	
Undo	Ctrl+Z	Command+Z	

## ELEMENT MENU

COMMAND	WINDOWS	MAC OS X	CUSTOM
Add Exposure	R	R	
Add Keyframe	I	I	
Delete Blank Cell	Shift+E	Shift+E	
Extend Exposure	Ctrl+Shift+1	Command+Shift+1	
Insert Blank Cells	Shift+R	Shift+R	
Next Motion Point	,	,	
Previous Motion Point	.	.	
Remove Exposure	E	E	
Remove Keyframe	Ctrl+R	Command+R	

**ELEMENT MENU**

COMMAND	WINDOWS	MAC OS X	CUSTOM
Set Exposure	Ctrl+4	Command+4	
Set Exposure to 1	Ctrl+1	Command+1	
Set Exposure to 2	Ctrl+2	Command+2	
Set Exposure to 3	Ctrl+3	Command+3	

**FILE MENU**

COMMAND	WINDOWS	MAC OS X	CUSTOM
Close	Ctrl+W		
Exit	Ctrl+Q		
New	Ctrl+N	Command+N	
Open	Ctrl+O	Command+O	
Save	Ctrl+S	Command+S	
Save As	Ctrl+Shift+S	Command+Shift+S	
Print	Ctrl+P	Command+P	

**HELP MENU**

COMMAND	WINDOWS	MAC OS X	CUSTOM
Toon Boom Studio Help	F1	Shift+Command+?	
What's This? Help	Shift+F1	Shift+Option+?	

**LIBRARY MENU**

COMMAND	WINDOWS	MAC OS X	CUSTOM
Refresh	F5	F5	

**PLAY MENU**

COMMAND	WINDOWS	MAC OS X	CUSTOM
Play	P	P	
Preview Exposure Sheet	Ctrl+Alt+Enter	Command+Option+Return	
Preview Exposure Sheet Selection	Shift+Enter	Shift+Return	
Preview Movie	Ctrl+Shift+Enter	Shift+Command+Return	
Preview Scene	Ctrl+Enter	Command+Return	
Quick Preview	Enter	Return	

**TOOLS MENU**

COMMAND	WINDOWS	MAC OS X	CUSTOM
Bone Creator Tool	U	U	
Bone Manipulator	H	H	
Bone Setup Tool	J	J	
Brush	Shift+2	Shift+2	
Cycle Brush Tools	2	2	
Cycle Eraser Tools	4	4	
Cycle Paint Tools	3	3	
Cycle Rotate Tools	8	8	
Cycle Select Tools	1	1	
Cycle Zoom Tools	5	5	



## TOOLS MENU

COMMAND	WINDOWS	MAC OS X	CUSTOM
Dropper (when Brush, Paint or Pencil tool is selected)	Alt	Option	
Eraser	Shift+4	Shift+4	
Grabber	Shift+6	Shift+6	
Group Selection	Ctrl+G	Command+G	
Motion	0 (zero)	0 (zero)	
Nudge Backwards (when Transform tool is selected)	Alt+↑	Option+↑	
Nudge Forwards (when Transform tool is selected)	Alt+↓	Option+↓	
Paint	Shift+3	Shift+3	
Paint Multiple Drawings	Shift+Alt	Shift+Option	
Peg-Only Mode	M	M	
Scale	9	9	
Select Drawing Objects	Shift+1	Shift+1	
Select Elements	6	6	
Start New Bone Chain (when Bone Creator Tool is selected)	Shift	Shift	
Text	T	T	
Transform	7	7	
Ungroup Selection	Ctrl+Shift+G	Command+Shift+G	
Zoom	Shift+S	Shift+S	

## VIEW MENU

COMMAND	WINDOWS	MAC OS X	CUSTOM
Toggle Floating Windows Visibility	Tab	Tab	
Grid Display Toggle	G	G	
No Next Drawings	Shift+W	Shift+W	
No Previous Drawings	Shift+Q	Shift+Q	
Onion Skin Next Drawing Cycle	W	W	
Onion Skin Previous Drawing Cycle	Q	Q	
Recentre	Shift+Space	Shift+Space	
Reset Rotation	Shift+C	Shift+C	
Reset View	Shift+V	Shift+V	
Reset Zoom	Shift+Z	Shift+Z	
Rotate Clockwise	V	V	
Rotate Counter Clockwise	C	C	
Show/Hide Strokes	K	K	
Switch Active View	B	B	
Turn Auto Light Table On/Off	L	L	
Turn Full Screen On/Off	Ctrl+F	Command+F	
Zoom In	X	X	
Zoom Out	Z	Z	

## WINDOWS MENU

COMMAND	WINDOWS	MAC OS X	CUSTOM
Colour Palette	Ctrl+Shift+C	Command+Shift+C	
Exposure	Ctrl+Shift+E	Command+Shift+E	
Function Editor	Ctrl+Shift+F	Command+Shift+F	
Minimize		Command+M	
Pen view	Ctrl+Shift+N	Command+Shift+N	

WINDOWS MENU			
COMMAND	WINDOWS	MAC OS X	CUSTOM
Properties view	Ctrl+Shift+P	Command+Shift+P	
Scene Manager	Ctrl+Shift+M	Command+Shift+M	
Timeline	Ctrl+Shift+T	Command+Shift+T	