Toon Boom Studio 8.1
User Guide

Legal Notices

Toon Boom Animation Inc.
4200 Saint-Laurent, Suite 1020
Montreal, Quebec, Canada
H2W 2R2

Tel: +1 514 278 8666
Fax: +1 514 278 2666

toonboom.com

Disclaimer

The content of this guide is covered by a specific limited warranty and exclusions and limit of liability under the applicable License Agreement as supplemented by the special terms and conditions for Adobe®Flash® File Format (SWF). For details, refer to the License Agreement and to those special terms and conditions.

The content of this guide is the property of Toon Boom Animation Inc. and is copyrighted.

Any reproduction in whole or in part is strictly prohibited.

Trademarks

Toon Boom Studio® is a registered trademark, and the Toon Boom logo are trademarks of Toon Boom Animation Inc.

Credits

Art Development: Shabana Ali, Marie-Eve Chartrand, Tania Gray, Anouk Whissell

Technical Editor: Peter Cawthorne, Pamela Grimaud, Liven Tam

Technical Reviewer: Gabriel Bouchard, Virginie Filion, John Payne, Natalia Solari, Jacques Tremblay

Technical Writer: Shabana Ali, Marie-Eve Chartrand, Christopher Diaz, Annie Rodrigue, Liven Tam, Phoebe Wang-Chao, Anouk Whissell

Publication Date

2014-05-06

Copyright © 2014 Toon Boom Animation Inc. All rights reserved.

PUSG101TBS81EN

Avis Légal

Toon Boom Animation Inc.
4200, boul. St-Laurent, Bureau 1020
Montréal, Québec, Canada H2W 2R2

Tél: +1 514 278 8666
Fax: +1 514 278 2666

toonboom.com

Avis de non-responsabilité

Toon Boom Animation Inc. et ses auteurs ont déployé leurs meilleurs efforts pour préparer ce manuel et son contenu est basé sur la dernière version du logiciel dans la mesure du possible. Certaines parties du texte peuvent provenir d'autres versions du logiciel décrit ici. Toon Boom Animation Inc. et ses auteurs déclinent toute garantie e ou tacite d'utilisation ou des résultats de l'utilisation de la documentation en termes d'exactitude, de précision, de fiabilité ou autre. Toon Boom et ses auteurs ne seront en aucun cas responsables envers vous ou des tiers en cas de dommages indirects, spéciaux, exemplaires, accidentels, dissuasifs, de couverture ou accessoires (y compris, et sans s'y limiter, les dommages pour inaptitude à utiliser l'équipement ou accéder aux données, perte d'exploitation, perte de profits, interruption de l'activité et tout autre dommage, direct ou indirect), liés à l'utilisation ou à l'impossibilité d'utilisation de la documentation, même si Toon Boom ou ses représentants ont été prévenus de la possibilité de tels dommages.

L'information dans ce manuel est sujette à changement sans préavis. Le contenu de ce manuel est couvert par les clauses de Garantie limitée et limitation de responsabilité et de Conditions d'utilisation spéciales pour le format de fichier de Flash d'Adobe (SWF) incluses dans le Contrat de Licence Utilisateur. Veuillez vous référer au Contrat de Licence Utilisateur et à ces clauses particulières pour plus de détails.

Le contenu de ce manuel est la propriété de Toon Boom Animation Inc. and est protégé de droits. Le présent manuel ne doit faire l'objet d'aucune copie, photocopie, reproduction, traduction ou conversion sous quelque forme que ce soit, électronique ou lisible par machine, sans le consentement écrit de Toon Boom Animation Inc.

Pour des copies additionnelles, veuillez communiquer avec Toon Boom Animation Inc.

Marques déposée

Remerciements

Art Development: Shabana Ali, Marie-Eve Chartrand, Tania Gray, Anouk Whissell

Technical Editor: Peter Cawthorne, Pamela Grimaud, Liven Tam

Technical Reviewer: Gabriel Bouchard, Virginie Filion, John Payne, Natalia Solari, Jacques Tremblay

Technical Writer: Shabana Ali, Marie-Eve Chartrand, Christopher Diaz, Annie Rodrigue, Liven Tam, Phoebe Wang-Chao, Anouk Whissell

Date de parution: 2014-05-06

Copyright © 2014 Toon Boom Animation Inc. All rights reserved.

PUSG101TBS81EN

Contents

Toon Boom Studio 8.1 User Guide 1
Legal Notices 2
Avis Légal 2
Contents 4
Chapter 1: Introduction 23
Animation Techniques in a Nutshell 24
Resources 28
Documentation 28
Online Resources 28
Workout Series 28
Video Lessons 29
Tutorials 29
Tips and Tricks 29
Templates 29
Registered Members 30
Get Help and Hone Your Skills! 30
Knowledge Base 30
User Forum 30
Animation Glossary 30
Chapter 2: Starting Your Project 31
Starting Toon Boom Studio 32
Welcome Screen 33
Creating and Opening a Project 34
What are Frame Rates and Formats? 34
Creating and Opening Projects from the Welcome Screen 34
Creating a New Project from the Welcome Screen 35
Opening a Project from the Welcome Screen 36
Creating and Opening a Project from the File Menu 36
Creating a New Project from the File Menu 37
Opening a Project from the File Menu 37
Opening a Project File from Another Toon Boom Product 37
Changing the Project Format 38
Organizing Your Work 39
Naming Your Files 39

Saving Files and Structuring a Project 39
User Interface Language 41
Windows 41
Mac OS X 41
Adding Template Copyright and User Name Information 42
Setting the Location of Global Library 43
Some Basic Animation Concepts 44
Bitmap and Vector Graphics 44
Bitmap Image Types 44
Vector Image Types 44
Advantages and Disadvantages of Bitmap and Vector Images 45
Palettes 45
Advantages of Using a Colour Palette 45
Exposure Sheet and Timeline 46
Exposure Sheet 46
Timeline 47
Exposure Sheet and Timeline Usage 47
Pegs 48
Multiplane Camera 48
Multiplane Usage 49
Planning Your Project 50
What is a Scene? 50
Planning Your Scenes 50
Help Tools 51
Toon Boom Studio 8.1 Getting Started Guide 51
Toon Boom Studio 8.1 Online Help 51
Context Sensitive Help 51
Preferences 52
Preference Highlights 52
Accessing the Preferences Panel 53
Display 53
Renderer 53
Rendering Options 54
Tablet Support 54
Chapter 3: Discovering the Interface 55
Interface Components 56

Menus 56
Top Menu 56
Quick Access Menu 56
Toolbars 57
Views 58
Interface Highlights 60
Camera View 60
View Navigation Toolbar 61
Switch View Toolbar 61
Timeline View 62
Timeline View Toolbar 62
Drawing Tools Toolbar 63
Animation Tools Toolbar 63
Interactive Playback Toolbar and Play Menu 64
Interactive Playback Toolbar 64
Play Menu 64
Managing Views 66
Adding a New View 66
Closing a View 67
Undocking and Docking Windows and Views 67
Undocking 68
Docking 69
Moving the Floating Window Around the Desktop 70
Swapping Views 70
Resizing a View 71
Showing and Hiding the Status Bar 71
Extending the Side Panel 72
Managing Toolbars 73
Showing or Hiding Toolbars 73
Moving Toolbars on Windows 73
Customizing Toolbars on Mac OS X 73
Workspaces 75
Loading a Workspace 75
Creating a Workspace 75
Renaming a Workspace 76
Saving a Workspace 76

Deleting a Workspace 76
Restoring the Default Workspaces 76
Interface Navigation 77
Preferences 78
Interface Preferences 78
Element Colours 78
Window Background Colours 78
Show All Tips Again 78
Keyboard Shortcuts 79
Chapter 4: Drawing and Design 81
Drawing Basics 82
Drawing in the Drawing or Camera View 83
Drawing View 83
Camera View 83
Drawing Using the Brush or Pencil Tool 85
Brush Tool 85
Pencil Tool 85
Converting Lines 86
Convert Lines to Brush 86
Extract Centre Line - Converting a Brush Shape to a Pencil line 86
Relative Sizes of Characters and Props 88
Sketching 90
Tracing 92
Erasing Part of a Drawing 95
Selecting Drawing Objects 96
Repositioning a Pivot Point 97
Pen View 99
Setting Up the Brush and Eraser Tools 99
Eraser and Brush Styles 100
Setting Up the Pencil Tool 100
Setting Up the Shape Tools and Polyline Tool 101
Changing the Thickness of a Centreline Object 101
Managing Pen Styles 102
Adding a Pen Style 102
Editing a Pen Style 102
Removing a Pen Style 103

Drawing Invisible Lines 104
Working With Text 106
Creating Text 106
Formatting the Text 107
Converting Text into Separate Objects 107
More Drawing Tools 109
Shape Tools 109
Polyline Tool 110
Contour Editor Tool 111
Snap to Contour 113
Perspective Tool 113
Cutter Tool 114
Scissor Tool 115
More Drawing Options 117
Group and Ungroup 117
Smooth 118
Flatten and Optimize 118
Flatten 119
Optimize 119
Transform 120
Arrange 121
Show Current Drawing on Top 121
Preferences 123
Window Background Colours 123
Light Table 124
Chapter 5: Adding Colours 125
How to Paint 126
Colours 127
Adding a Colour Swatch 127
Solid Colour Swatch 128
Gradient Colour Swatch 134
Bitmap Texture Swatch 138
Deleting a Colour Swatch 140
Colour Display Modes 141
Using the Painting Tools 142
Painting with the Paint Tool 142

Painting with the Paint Unpainted Tool 143
Unpainting Areas with the Unpaint Tool 144
Closing Gaps 145
What is a Gap? 145
Closing Holes with the Close Gap Tool 145
Closing Holes Using Automatic Close Gap 146
Selecting a Colour in a Drawing 148
Editing Gradients and Textures 149
Setting a Gradient or Texture with the Paint Tool 149
Setting a Gradient or Texture with the Edit Texture Tool 150
Palettes 152
Creating a Colour Palette 153
Renaming a Colour Palette 153
Deleting a Colour Palette 154
Duplicating a Colour Palette 155
Creating a Palette Style 156
Assigning a Style 157
Deleting a Style 157
Mixing the Colours 157
Exporting a Colour Palette 159
Importing a Colour Palette 159
Chapter 6: Importing Artwork 161
Importing Bitmap Images 162
Importing Bitmaps Without Vectorizing 162
Adding Images to a Bitmap Layer 163
Vectorization of an Image Element or Image Cell 164
Importing and Vectorizing Images 165
Import Images with Keying 168
Importing Multilayered PSD Files 172
Importing AI and PDF files 174
Importing from Adobe Flash 176
Importing a Movie 177
Importing a Bitmap Movie File 177
Importing a Movie in an Existing Image Layer 178
Capture 179
Scanning Images 180

Library 182
Understanding the Library Concept 182
What is a Library? 182
What is a Template? 182
Library View 183
Preview 183
Library List 184
Template List 184
Structuring the Library 184
Creating a Library 185
Opening and Closing a Library 186
Creating a Catalog 186
Renaming a Catalog 187
Deleting a Catalog 187
Refreshing the Library 187
Reloading Default Templates 187
Saving the Library 187
Templates 187
Creating a Template 188
Deleting a Template 189
Editing a Template 189
Template Properties 191
Importing Multimedia files into the Library view 192
Importing a Template in Your Scene 192
Linking Templates to Media Elements 193
Copying Selected Template Contents into Your Animation 193
Using Paste Special to Update Content from a Template 194
Chapter 7: Layers and Timing 197
Understanding the Timeline and Exposure Sheet Views 198
Timeline View 198
Timeline View Toolbar 198
Layer Section 199
Timing Section 200
Exposure Sheet View 200
Main Section 201
Element List Section 201

Exposure Sheet Toolbar 202
Column Header 202
Drawing 202
Frame Numbers 202
Layers and Columns 204
Layer Concepts 204
Layer Types 205
Drawing Element 205
Image Element 205
Camera Element 205
Effect Element 205
Peg Element 206
Sound Element 206
Annotation Element 206
Media Element 207
Adding New Elements 207
Adding Layers in the Timeline View 207
Adding an Element from the Top Menu 208
Adding New Columns in the Exposure Sheet View 208
Deleting Elements 208
Deleting a Layer from the Timeline View 208
Deleting Columns from the Exposure Sheet View 209
Modifying Elements 209
Ordering Elements 209
Show and Hide Elements 210
Renaming an Element 212
Exposure Sheet Thumbnails 213
Changing the Colour of a Column or Layer 213
Expanding and Collapsing Layers 215
Modifying the Column Width 215
Filling Exposure 217
Typing Exposure 217
Extending Exposure 218
Dragging Cells 219
Increasing and Decreasing Exposure 220
Add Exposure 220

Remove Exposure 221
Deleting Exposure 222
Inserting Blank Cells 222
Setting the Exposure 223
Filling a Selection with a Sequence 224
Creating Cycles 225
Navigating Between Frames and Columns 228
Managing Drawings 230
Renaming a Drawing 230
Duplicating a Drawing 230
Copying and Pasting Drawings 231
Preferences 232
Time Measurement 232
Chapter 8: Traditional Digital Animation 233
Traditional Animation Tools 234
Onion Skin 234
Auto Light Table 235
Static Light Table 236
Reposition All Drawings 238
Lock Drawing 239
Clear Drawing 240
Animating Traditionally 241
Animating 241
Cleaning Up 243
Power Painting 245
Setting the Timing 246
Playing Back Your Animation 246
Rotoscoping 247
What is Rotoscoping? 247
Reasons for Rotoscoping 247
Selecting a Video 248
Importing a Video 248
Tracing the Character 249
Tracing 249
Fine Tuning the Animation 250
Painting the Animation 251

Marking Corrections and Notes 252
Annotation Elements 252
Working with Notes 253
Layer Notes 253
Cell Notes 253
Preferences 255
Onion Skin 255
Static Light Table 255
Chapter 9: Creating a Cut-out Puppet 257
About Building a Cut-out Puppet 258
Choosing Your Character 259
Creating a New Project and Importing a Character 259
Creating a Colour Palette 260
Cutting the Character into Pieces 261
How to Cut the Pieces 261
Cutting Out Your Pieces 262
Drawing your Pieces 264
Attaching the Pieces 267
Ordering Your Layers 268
Attaching the Layers 269
Ordering Parented Layers 269
Adding a Master Peg 271
Setting the Pivots 273
Storing the Character in the Library 276
Chapter 10: Setting the Scene 277
Importing the Scene Elements 278
Background, Sound or Movie 278
Show Scene Background Colour 278
Templates 278
Ordering the Element Layers 279
Ordering Layers in the Timeline View 279
Ordering Layers Using the Arrange Command 280
Ordering Layer Types 280
Positioning the Scene Elements 281
Positioning Elements Using the Select Tool 281
Positioning Elements Using the Properties View 281

Flipping Elements 282
Show Outline Selection 283
Locking Elements 283
Locking and Unlocking a Layer 283
Locking and Unlocking All Layers 284
Locking All Other Layers 284
Cloning and Duplicating Elements 285
Cloning Layers 285
Duplicating Layers 286
Setting the Camera Frame 288
Adding a Camera Layer 288
Choosing the Active Camera Layer 289
Setting the Camera Frame Position 290
Setting the Frame Using the Select Tool 290
Setting the Frame Using the Properties View 291
Creating a Multiplane 293
Distributing the Elements on the Z-axis 293
Top and Side Views 294
Camera View 296
Properties View 296
Chapter 11: Creating Motion Paths 299
Animating Objects on a Layer 300
Instant Motion 301
Instant Motion Properties 303
Orienting Animation on a Path 303
Pegs 305
Adding a Peg 305
Adding a Parent Peg 305
Parenting Elements to a Peg 306
Expanding and Collapsing Layers 307
Peg Only Mode 307
Peg Toolbar 308
Motion Path 310
Creating a Basic Motion Path 310
Displaying and Hiding a Motion Path 312
Adding and Controlling Motion Points 312

Switching between Keyframes and Control Points 315
Adjusting the Tension, Bias and Continuity 316
Previous and Next Control Point 317
Orient to Path 318
Constant Z 319
Snap Last Keyframe 319
Animating the Camera 320
Adding a Peg to Your Camera 320
Making a Basic Camera Move 320
Function Editor View 322
Function Editor View - Overview 322
Adjusting the Velocity 323
Adding and Deleting Motion Points in the Function Editor View 325
Adding Motion Points 326
Delete Motion Points 327
Changing the Values of a Motion Point 327
Other Options 330
Attach to Next Object 330
Detach from Parent 330
Changing the Start Frame 331
Changing the Duration 331
Change Loops 332
Element Notes 333
Show Timeline Selection 334
Paste Special 335
Paste Special Again 337
Preferences 338
Sceneplanning Preferences 338
Motion Points 338
Coordinate Units 338
Show Units 339
Coordinate Units 339
Camera View 339
Use Box Highlighting 339
Selection Always Visible 340
Pegs 340

Create Linear Spline 340
Create Constant Keyframes 340
Timeline 341
Single Cell Selection 341
Chapter 12: Bones 343
About the Skeleton Effect 344
Bone Tools Toolbar 345
Setup Mode 345
Animation Mode 347
Choosing Your Character 349
Planning and Preparing Your Character 350
Adding the Skeleton 352
Robo-Skeleton Templates 352
Choosing Your Robo-Skeleton Template from the Library 352
Importing Your Robo-Skeleton into a Scene 355
Adding Your Own Character to the Robo-Skeleton Template 355
Building the Skeleton 361
Adding Bones 361
Adding Bones from the Timeline View 364
Setting Up the Bones 366
Resetting the Position of a Bone 369
Setting the Influence Area 369
Influence Area 370
Infinite 371
Elliptical 371
Modifying the Size and Shape of the Influence Area 371
Parenting Bone Chains 373
Unparenting Bone Chains 375
Animating the Skeleton 376
Reassembling the Character 376
Ordering Limbs 378
Character with Limbs on Different Drawing Layers 378
Character on a Single Drawing Layer 379
Hiding Bones 379
Animating Bones 380
Onion Skin Toolbar 383

Natural Movement 383
Blocking the Body's Position 385
Deleting Keyframes 386
Removing All Keyframes 386
Adjusting the Velocity and Functions 387
Disabling a Bone Animation 388
Skeleton Effect Properties 389
Preferences 392
Chapter 13: Animating a Puppet 395
Getting the Character From the Library 396
Extending the Exposure 397
Extending the Exposure of a Peg's Children Layers 397
Understanding Keyframes and Drawings 399
Keyframes and Drawing Blocks 399
Creating a Simple Cut-out Animation 400
Animating the Parts 400
Blocking the Body's Position 401
Deleting Keyframes 402
Copying and Pasting Keyframes 402
Constant and Non-Constant Segments 403
Non-Constant Segment 403
Constant Segment 404
Navigating Inside a Hierarchy 404
Selecting a Parent or Child Element 405
Selecting Brother Elements 406
Using the Different Animation Tools 407
Using the Transform Tool 407
Using the Motion Tool 408
Using the Rotate Tool 408
Using the Skew Tool 409
Using the Scale Tool 410
Using the Select Tool 411
Adjusting the Velocity 411
Using the Onion Skin in Cut-out Animation 415
Swapping Images 416
Preferences 418

Sceneplanning Tab Preferences 418
Create Linear Spline 418
Create Constant Keyframes 418
Chapter 14: Sound and Lip-sync 421
Accessing the Sound and Lip-sync Tools 422
Sound Toolbar 423
Sound Layer Properties 423
Importing a Sound File 424
Sound Display 425
Sound Display - Exposure Sheet View 425
Sound Name 425
Waveform 425
Lip-sync Mouth Shapes - Name 426
Lip-sync Mouth - Thumbnails 426
Sound Display - Timeline View 426
Sound Playback 428
Playing the Sound and Animation 428
Playing Only the Sound 428
Sound Scrubbing in the Timeline View 429
Editing a Sound File 430
Sound Element Editor 430
Changing the Start or End Frame of a Sound 431
Trimming a Sound File 433
Looping a Sound 434
Mixing the Sound Volume 435
Custom Playback Range 437
Changing from Event to Streamed Sounds 437
Sound Scrubbing in the Sound Element Editor 439
Deleting a Sound 439
Adding an Empty Sound Layer 441
Lip-sync 442
Lip-sync View 444
Creating a Lip-sync Using a Mouth Template 444
Creating a Lip-Sync Using Your Own Drawings 446
Lip-sync Detection 447
Automatic Lip-sync Detection 448

Modifying the Lip-sync Detection 449
Modifying the Lip-sync in the Exposure Sheet View 449
Modifying the Lip-sync in the Sound Element Editor 449
Recomputing the Mouth Chart 450
Chapter 15: Stop-motion Animation 451
Characters and Stage 452
Gathering Your Characters 452
Setting Up Your Background 452
Image Capture Settings 454
Setting Up the Image Capture Options 454
Light Table and Onion Skin 455
Capture Features 457
Auto Capture 457
Preview Window 457
Colour Keying 458
Image Capture 460
Capturing Images in an Existing Layer 462
Vectorization and Clean-up 463
Chapter 16: Enhancing with Effects 465
Special Effects 466
Previewing Effects 466
Blur Effect 470
Colour Transform Effect 473
Feather Edge Effect 477
Drop Shadow Effect 480
Clipping Effect 484
Shake Effect 489
Blockbuster and Forces of Nature Effects 492
Forces of Nature Effects 492
Rain Effect 494
Snow Effect 495
Hail Effect 496
Fog Effect 496
Cloud Effect 497
Volcano Effect 498
Blockbuster Effects 499

Shatter Effects 500
Magic Effects 502
Explosion Effects 503
Splash Effects 503
Fire Effects 504
Celestial Effects 505
Customizing Your Effect 505
Effects 506
General Properties Buttons 506
Static Parameters Tab 507
Dynamic Parameters Tab 508
Disabling All Effects 510
Chapter 17: Scenes and Transitions 511
Working with Scenes and Transitions 512
About the Storyline View 513
Playing a Sequence 513
Working with Scenes 514
Applying Transitions 517
Transitions 518
Fade 518
Wipe 519
Slide 519
Clock Wipe 520
Checker 520
Cross Dissolve 520
Chapter 18: Exporting Your Project 523
Export Drawing to PDF 524
Export Movie 525
Export Snapshot 527
Export to YouTube and Facebook 528
Exporting to YouTube 528
Exporting to Facebook 530
Print 533
Chapter 19: Keyboard Shortcuts for Toon Boom Studio 537
COMMAND 537
EDIT MENU 538

FILE MENU 538
HELP MENU 538
LIBRARY MENU 539
PLAY MENU 539
TOOLS MENU 539
VIEW MENU 540
WINDOWS MENU 541

Chapter 1: Introduction

Toon Boom Studio 8.1 is a multi-technique, vector-based software that is suitable for all your animation projects, be they clean and classic or 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 Studio is also ideal for simply learning how to animate.

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

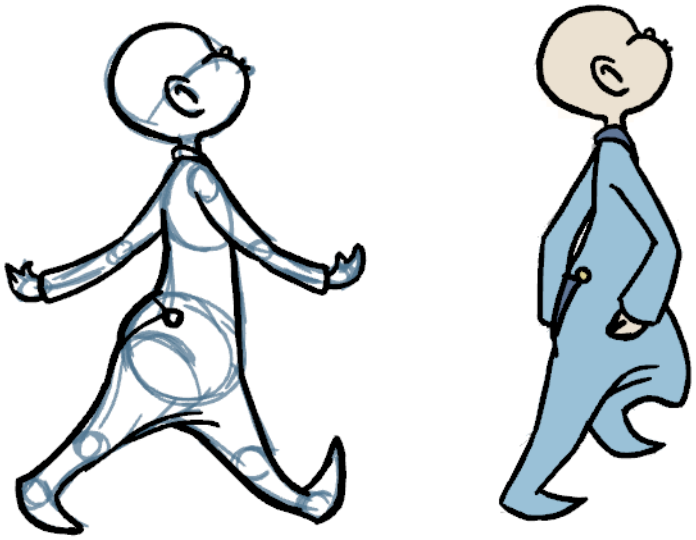
The following chapters will give a greater insight into how Studio works and what you can do to produce some great animation:

- Starting Your Project on page 31
- Discovering the Interface on page 55
- Drawing and Design on page 81
- Adding Colours on page 125
- Importing Artwork on page 161
- Layers and Timing on page 197
- Traditional Digital Animation on page 233
- Setting the Scene on page 277
- Creating Motion Paths on page 299
- Creating a Cut-out Puppet on page 257
- Bones on page 343
- Animating a Puppet on page 395
- Sound and Lip-sync on page 421
- Stop-motion Animation on page 451
- Enhancing with Effects on page 465
- Scenes and Transitions on page 511
- Exporting Your Project on page 523
- Keyboard Shortcuts for Toon Boom Studio on page 537

Animation Techniques in a Nutshell

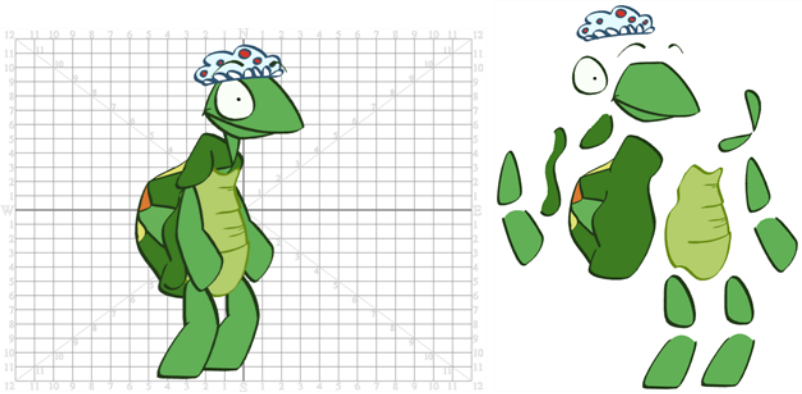
With Studio you can still animate traditionally in much the way animators have done for decades by simply putting pen to paper. Traditional animation methods can be used with Studio, from drawing your rough animation (the underlying structure of your animation), to cleaning it up, tracing solid and clean 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. The head, arms and clothes are added later, during the secondary phase.



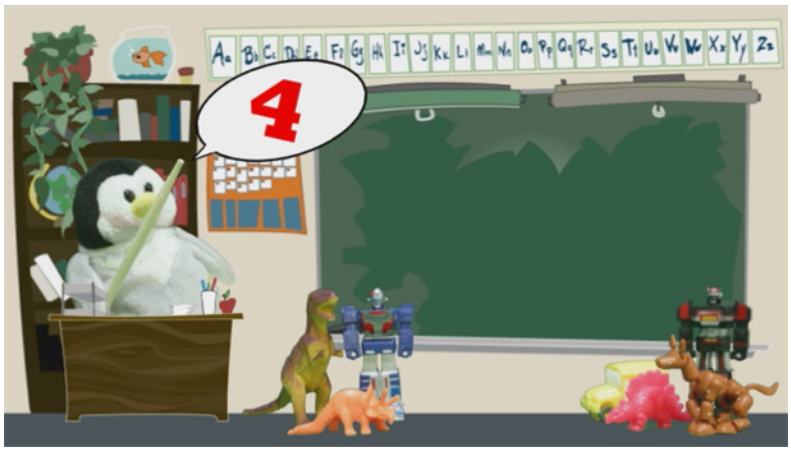
You can also work in a traditional fashion, but animate digitally. Traditional digital animation, also known as *hand-drawn* or *tradigital animation*, is the process of drawing every frame of an animation directly in Studio without the use of paper or scanner.

With Studio's extensive set of tools, you can 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.

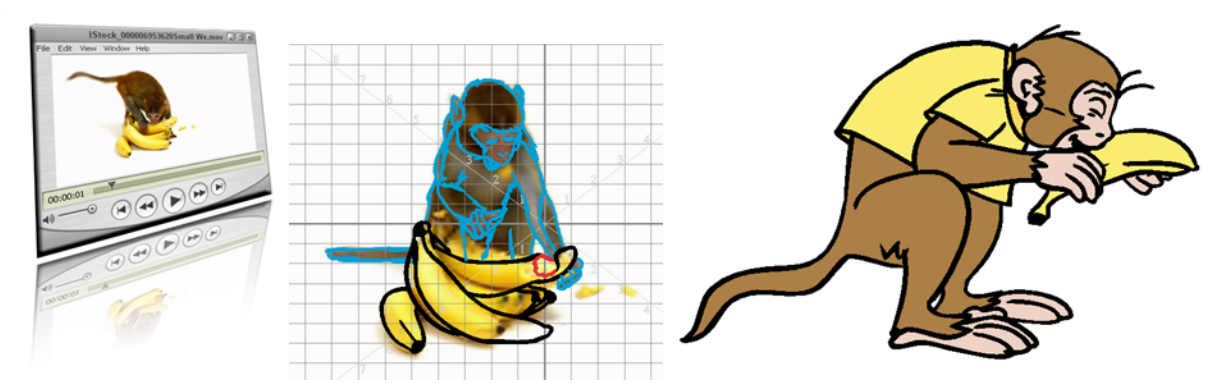


The Studio cut-out puppet principle is very similar to cutting up a character drawn on a sheet of paper and assembling the pieces using little brass fasteners. You create a drawing for each of your character's body parts and then attach them in the Timeline view. Next, you can articulate the character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

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 capture 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.

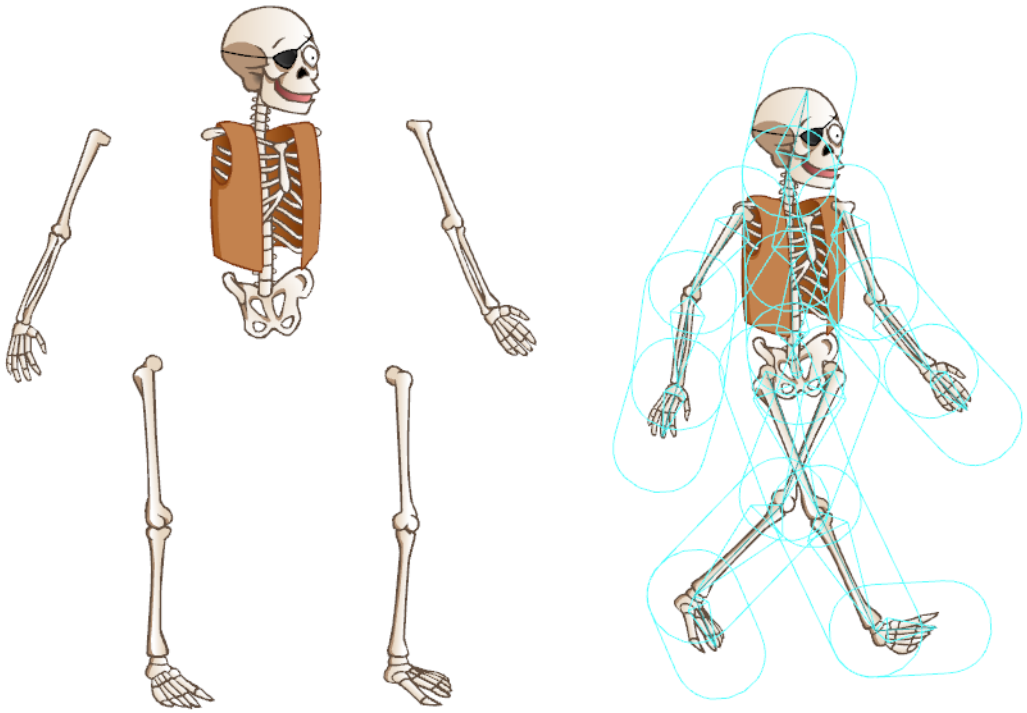


Studio also has rotoscoping capabilities for experimenting with or producing realistic movement in your characters.

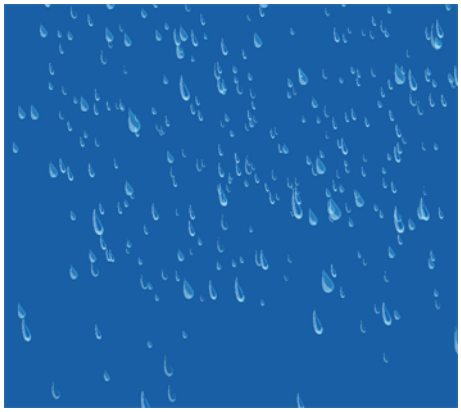


This technique requires the animator to trace over each frame of a live-action movie, a process that results in some very realistic movement. This rotoscoping technique was invented by the animation pioneer Max Fleischer in 1915 and involved projecting a movie frame-by-frame onto a optically correct 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. Studio's rotoscoping capabilities allows 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 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's it!



Toon Boom has also taken the ability to enhance your work to a whole new level by introducing effects based on Hollywood blockbuster effects and 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 outdoor encounter. The sky is the limit!



Resources

Toon Boom Studio has a wide variety of resources available.

- Documentation below
- Online Resources below
- Registered Members on page 30
- Get Help and Hone Your Skills! on page 30

Documentation

In addition to the Online Help available at docs.toonboom.com, there are other useful documents at your disposal. Learn how to get the most out of Studio with our easy-to-use documentation package:

- **Getting Started Guide**

  In Studio, select **Help > Getting Started** to open this quick Toon Boom Studio overview.

- **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.

Online Resources

Toon Boom's Resources tools, available at www.toonboom.com/resources, will help you to broaden your 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 Studio:

Select **Help > Toon Boom on the Web** to open the Toon Boom website in your default web browser. Select **Home Users > 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 Studio. Sharpen your skills while raising your endorphins!

Video Lessons

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 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.

Registered Members

Remember to register Toon Boom Studio. Register now and 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 Studio questions in the Knowledge Base, located on our website at:

- beta.toonboom.com/knowledge-base

User Forum

Registered 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.

- forums.toonboom.com/toon-boom-studio

Animation Glossary

A comprehensive glossary of terms is available on the Toon Boom website. Access it through the Knowledge Base at:

- beta.toonboom.com/glossary

Chapter 2: Starting Your Project

Toon Boom Studio is a great tool for learning animation; 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:

- Starting Toon Boom Studio on the next page
- Welcome Screen on page 33
- Creating and Opening a Project on page 34
- Changing the Project Format on page 38
- Organizing Your Work on page 39
- Adding Template Copyright and User Name Information on page 42
- Setting the Location of Global Library on page 43
- Some Basic Animation Concepts on page 44
- Planning Your Project on page 50
- Help Tools on page 51
- Preferences on page 52

Starting Toon Boom Studio

To use Toon Boom Studio, you have to start the application. Remember, you can use Studio on Mac OS X or Windows operating systems.

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

- **Mac OS X**: Double-click the Toon Boom Studio 8.1 icon or select **Applications > Toon Boom Studio 8.1**.
- **Windows**: Double-click the Toon Boom Studio 8.1 icon or select **Start > Programs / All Programs > Toon Boom Animation > Toon Boom Studio 8.1 > Toon Boom Studio 8.1**.

Toon Boom Studio opens, displaying the Welcome Screen.

Welcome Screen

When Toon Boom Studio starts, 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 must close the current project by selecting **File > Close**. 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 Getting Started 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 the format and the frame rate you will use.

- What are Frame Rates and Formats? below
- Creating a New Project from the Welcome Screen on the facing page
- Creating a New Project from the File Menu on page 37
- Opening a Project File from Another Toon Boom Product on page 37

What are Frame Rates and Formats?

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*, therefore the frame rate is the number of frames you play per second in your animation.

The format of your project is the size of your camera frame in pixels. You may not be familiar with the term *pixel*, 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 play back once it is on the web. The larger the images are, the heavier the project is, but also, the better the quality. If you want to export your project for the theatre, you will need to create your project using a large format so the image is of a high quality and looks good on the big screen.

Also, some display media such as iPod, TV or theatre have an exact format requirement. For example, one TV format that has been a standard for the past decades is 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.

In recent years, a new TV standard has been defined with the advent of Blu-ray and high-definition technologies. It is the 16:9 format, which is often referred to as HDTV (High Definition Television). The most common 16:9 format in pixel is 1920x1080.

You can find most of the formats in the presets list provided in the Welcome Screen.

To recap, the format is the size of your camera frame in pixels, and it matches the width and height required for the medium in which you want to show your final movie.

Creating and Opening Projects from the Welcome Screen

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

This section is divided as follows:

- Creating a New Project from the Welcome Screen on the facing page

- Opening a Project from the Welcome Screen on the next page

Creating a New Project from the Welcome Screen

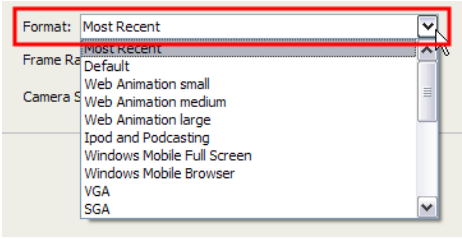
To create a project from the Welcome Screen:

1. In the Name field, type a 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.

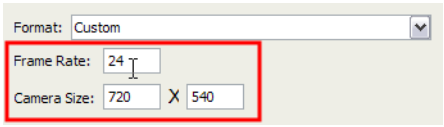
2. In the Format list, select the format in which you want to produce your project.

   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 setting 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 **Create** 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 on page 39 topic to learn more about structuring your files.

To save your project for the first time:

1. Select **File > Save As** or press [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 needed, 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 displays.
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)

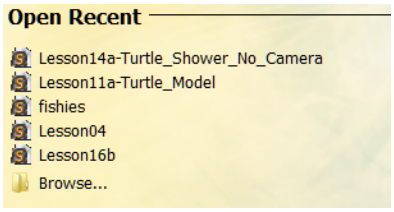
This is why it is important to give each project a name you can identify. If you have several projects called `project1.tbp`, `project2.tbp` and `project3.tbp`, it would be difficult to remember what was in each.

3. Click **Open**.

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.



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.

This section is divided as follows:

- Creating a New Project from the File Menu on the facing page
- Opening a Project from the File Menu on the facing page

Creating a New Project from the File Menu

To create a project from the File menu:

1. Do one of the following:
   - Select **File > New.**
   - In the Main toolbar (Top toolbar on Mac OS X), click the New button.
   - Press [Ctrl] + [N] (Windows) or [⌘] + [N] (Mac OS X).

   A 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. Do one of the following:
   - Select **File > Open.**
   - In the Main toolbar(Top toolbar on Mac OS X), click the Open button.
   - Press [Ctrl] + [O] (Windows) or [⌘] + [O] (Mac OS X)

   The Open Project browser opens.
2. Browse and select the `*.tbp` or `*.tbpd` file you want to open.
3. Click **Open**.

To open a recent project from the File menu:

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

Opening a Project File from Another Toon Boom Product

It is possible to open a Flip Boom (`*.fbp / *.fbpd`) (Flip Boom Classic, Flip Boom Cartoon, Flip Boom Doodle), Flip Boom All-Star (`*.fba`), Comic Boom (`*.cbp`,`*.cbpd`), Garfield's Comic Boom (`*.cbg`) and Animation-ish (`*.ish1`,`*.ish2*.ish3`) projects 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, Animation-ish or Comic Boom Project:

1. Start Toon Boom Studioto display the Welcome screen.
2. Click the **Browse** button to display the Open window.

   The Open dialog box appears.
3. Browse to the folder where your project is located.
4. Select the file to open and click **Open**.

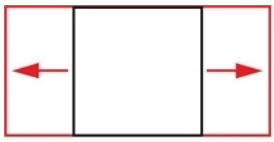
   The project opens in Toon Boom Studio.

Changing the Project Format

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

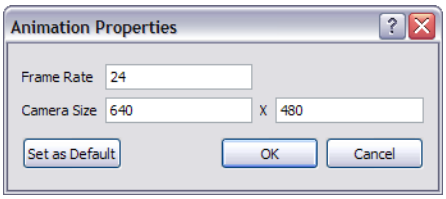
When you change the format of your project, if the size ratio is not the same, you may have to reposition some elements.

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 **Set As Default**.
5. Click OK.

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 to help organize your work:

- Naming Your Files below
- Saving Files and Structuring a Project below

Naming Your Files

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

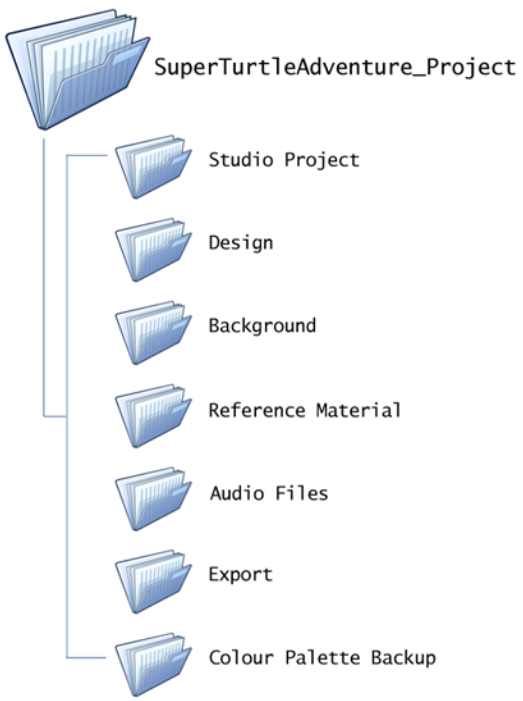
When you create your project, you must save it somewhere. It is a good idea to create a folder on your hard drive to contain all the elements of your project. Keeping everything together in one place is always useful for retrieving scenes, sounds, artwork, or reference material.

There are many ways to structure your project folder. 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 your production elements.

For example, the main directory could be called **SuperTurtleAdventure_Project**.

Once your main folder is created, you should create a subfolder 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 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:** Use 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.

This section is divided as follows:

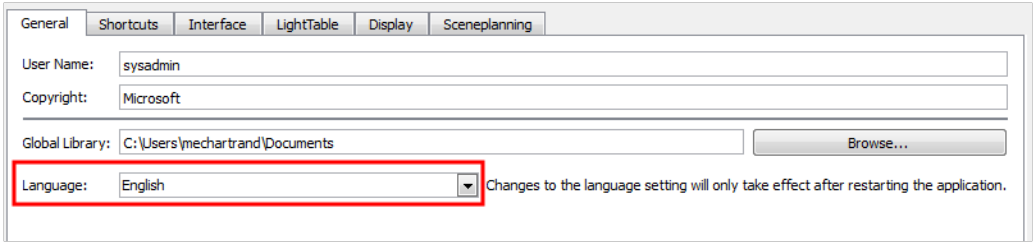
- Windows below
- Mac OS X below

Windows

To change the user interface language using Windows:

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

   The Preferences panel opens.



2. Select the **General** tab.
3. From the Language list, select **English** or **Français**.
4. Click OK.
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 set up 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 started when you made the changes, you must 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.

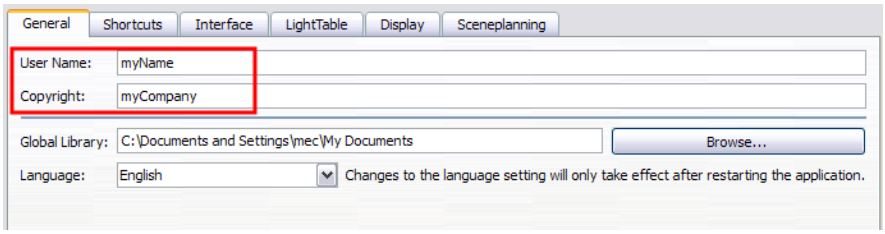
By default, the names assigned are the User Name and Copyright values entered while installing Toon Boom Studio on your machine.

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. From the top menu, select **Edit > Preferences** (Windows) or **Toon Boom Studio 8.1 > Preferences** (Mac OS X).

   The Preferences panel opens.



2. Select 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 OK.

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 access it from any of your projects.

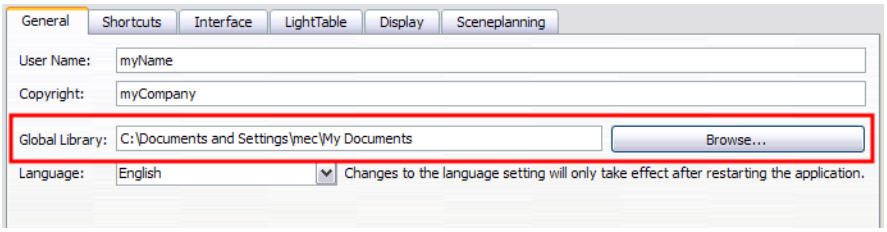
By default, the Global Library is installed in:

- **Windows:** C:\Documents and Settings\userName\My Documents\Toon Boom Studio - Global Library 8.0
- **Mac OS X:** /users/userName/Documents/Toon Boom Studio 8.1

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

To set the Global Library's location:

1. From the top menu, select **Edit > Preferences** (Windows) or **Studio > Preferences** (Mac OS X).
   The Preferences panel opens.



2. Select the **General** tab.
3. Beside the Global Library field, click **Browse**.
4. Browse for the Global Library's new location.
5. Click OK/Choose to close the Browse window.
6. Click OK 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 below
- Palettes on the facing page
- Exposure Sheet and Timeline on page 46
- Pegs on page 48
- Multiplane Camera on page 48

Bitmap and Vector Graphics

There are two types of digital images:

- Bitmap Image Types below
- Vector Image Types below

Bitmap Image Types

A bitmap image consists of pixels and has a fixed size. A 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 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, and so on. 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

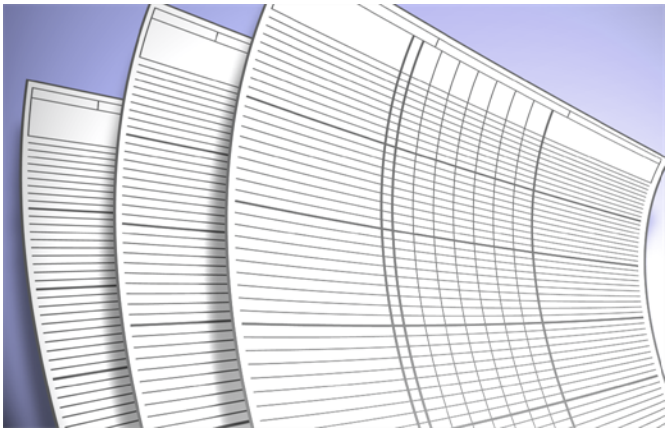
Using a colour palette has many benefits, including:

- 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.

Exposure Sheet and Timeline

The exposure sheet o rXsheet 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.

Exposure Sheet



The exposure sheet, also known as the Xs*heet* 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 exposure sheet allows the user to see the timing in detail.

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

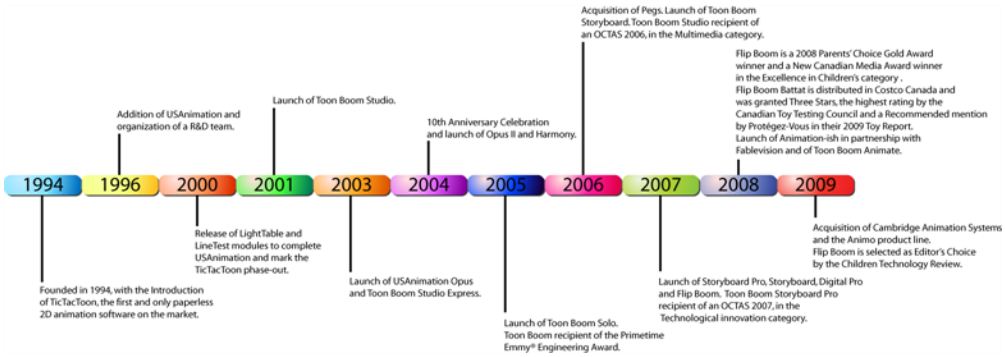
Exposure Sheet

	seaweed(0)	seaweed(1)	seaweed(2)	seaweed(3)	Coral reef	Bubbles(3)	Bubbles(2)	Bubbles(1)	Bubbles(0)
1	seaweed-20	seaweed-14	seaweed-1	seaweed-3	Coral reef-1				
2	|	|	|	|	|				
3	seaweed-4	seaweed-5	seaweed-10	seaweed-17	|				
4	|	|	|	|	|				
5	seaweed-21	seaweed-15	seaweed-11	seaweed-18	|			Bubbles-16	
6	|	|	|	|	|			|	
7	seaweed-22	seaweed-16	seaweed-8	seaweed-6	|			Bubbles-15	
8	|	|	|	|	|			|	
9	seaweed-9	seaweed-3	seaweed-12	seaweed-19	|			Bubbles-14	
10	|	|	|	|	|			|	
11	seaweed-23	seaweed-17	seaweed-13	seaweed-20	|			Bubbles-1	
12	|	|	|	|	|			|	
13	seaweed-24	seaweed-18	seaweed-14	seaweed-4	|			Bubbles-2	
14	|	|	|	|	|			|	
15	seaweed-1	seaweed-6	seaweed-5	seaweed-21	|			Bubbles-3	
16	|	|	|	|	|			|	
17	seaweed-10	seaweed-19	seaweed-15	seaweed-22	|			Bubbles-4	
18	|	|	|	|	|			|	
19	seaweed-11	seaweed-20	seaweed-16	seaweed-9	|			Bubbles-5	
20	|	|	|	|	|			|	

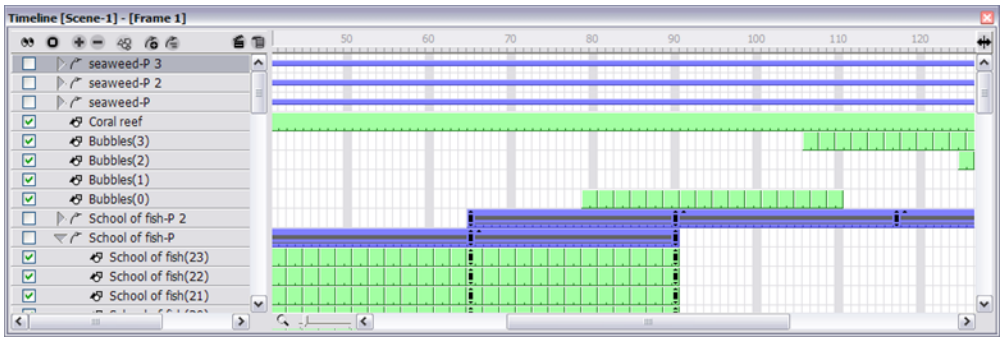
The traditional paper exposure sheet was mainly created for the animator to write down the drawing timings and main actions. Toon Boom Studio uses a digital exposure sheet for the same purpose.

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.

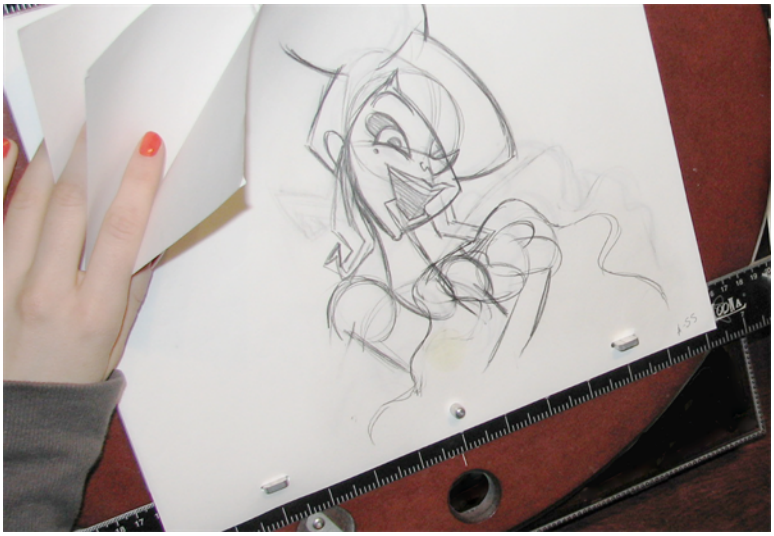


Exposure Sheet and Timeline Usage

Exposure sheets and timelines are used for different tasks. With hand-drawn animation, the exposure sheet is useful for keeping track of the drawings' ordering, names, and timings. The exposure sheet is used to reproduce the animator's work in the digital software or the camera.

For puppet animation, compute-generated trajectories, and distortions, there is a lot of extra information involved, including keyframes, velocities, function curves, and so on. 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, 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 exposure sheet 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.

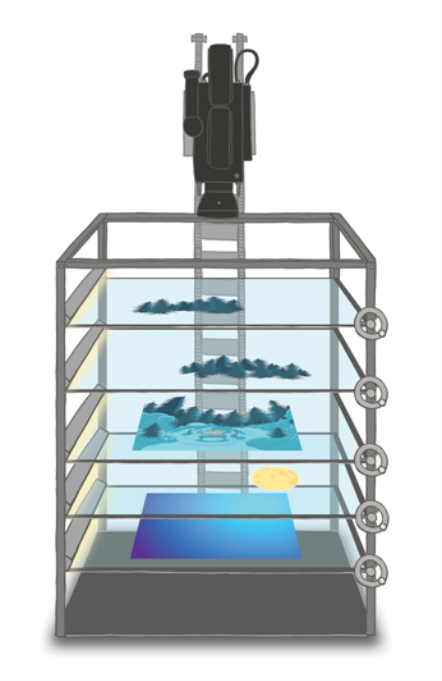
To keep the drawings together, we use a peg bar. This bar has three pins shaped exactly like the peg holes. Peg bars are normally found at the bottom and top of animation discs.

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 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 another. 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

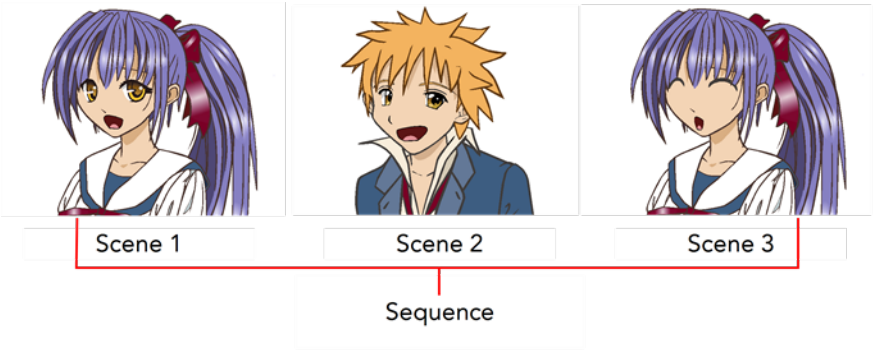
Multiplane camera effects can be created digitally. There is no longer a need to use the big multiplane camera. Multiplane shots are normally used to add depth to a scene to reproduce perspective effect more easily. They can also be used on a smaller scale to make elements pass in front of and behind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

What is a Scene?



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 films the second character, you have a second scene. When the camera returns to the first character, you have a third scene, and so on.

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 want to animate in your project, but if you want to take it further, you can create a drawing that represents 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 Pro.

Once you know which scenes you need in your project, you can create your scene list based on your plan.

Related Topics

- Working with Scenes on page 514

Help Tools

While learning and working with Toon Boom Studio, you have access to the following help tools:

- Toon Boom Studio 8.1 Getting Started Guide below
- Toon Boom Studio 8.1 Online Help below
- Context Sensitive Help below

Toon Boom Studio 8.1 Getting Started Guide

The Getting Started guide briefly explains the general features and concepts included in the application so that you can quickly get up to speed with Toon Boom Studio. It is available through the **Help > Getting Started** menu, as PDF file.

Toon Boom Studio 8.1 Online Help

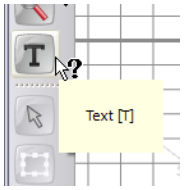
The Online Help explains in details each command and feature included in the application. It is available through the **Help > Online Help** menu. The Online Help is available online at docs.toonboom.com. The Online Help can be prompted using [F1] (Windows) or [⌘] + [Shift] + [?] (Mac OS X).

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:

1. Press the [Shift] + [F1] (Windows) or [Alt] + [Shift] + [?] (Mac OS X) keyboard shortcut.
2. Once you get the Question Mark or Hand icon, click on the button or menu item you want to learn about.



3. 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 below
- Accessing the Preferences Panel on the facing page
- Display on the facing page

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

- Starting Your Project on page 31
- Drawing and Design on page 81
- Importing Artwork on page 161
- Adding Colours on page 125
- Layers and Timing on page 197
- Animating a Puppet on page 395
- Setting the Scene on page 277

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 8.1 > Preferences** (Mac OS X).

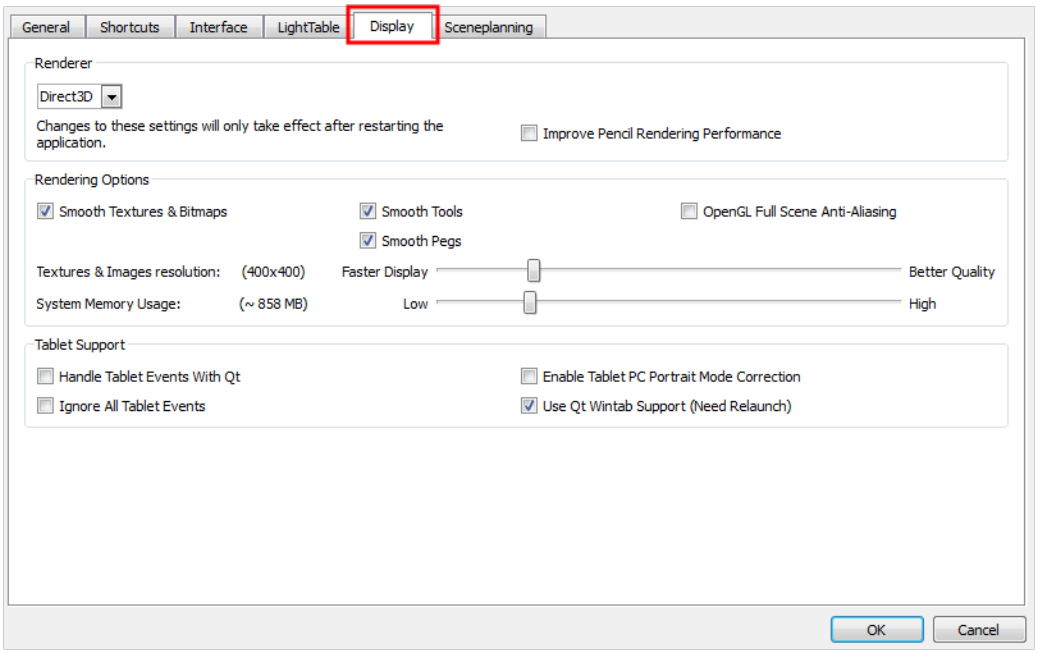
Display

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

To open the Preferences panel:

- Windows: Select **Edit > Preferences**.
- Mac OS X: Select **Toon Boom Studio 8.1 > Preferences**.

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



Renderer

- **Direct3D** : By default, Toon Boom Studio uses Direct3D for rendering images in the Camera and Drawing views, but you can change this preference to use OpenGL (Windows).
- **Improve Pencil Rendering Performance:** Select this option if you are having problems with centreline strokes slowing down the software.

Note that you must restart the application in order for the Renderer settings to take effect.

Rendering Options

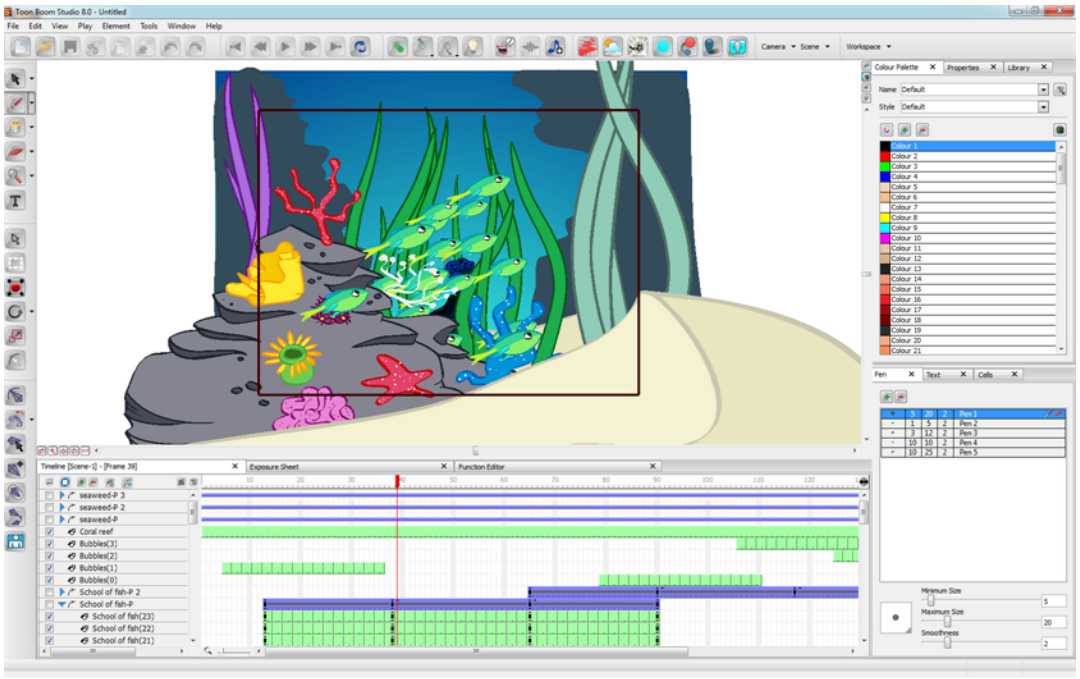
- **Smooth Textures & Bitmaps**: Improves bitmap image quality by smoothing-out the pixels of bitmap images when zooming in.
- **Smooth Tools**: This option is enabled by default; it increases the display quality of tools. Disabling it will lower the display quality but increase the display speed.
- **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 graphics card. This antialiasing will not only antialias your drawings but all the different views in the interface. You can turn the Full Scene Antialiasing preference on or 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 graphics 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, drag the slider left or right.
- **System Memory Usage**: You can change the amount of system memory allocated to bitmap files 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, drag the slider left or right.

Tablet Support

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

- **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.

Chapter 3: Discovering the Interface



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

This chapter is divided as follows:

- Interface Components on the next page
- Interface Highlights on page 60
- Managing Views on page 66
- Managing Toolbars on page 73
- Workspaces on page 75
- Interface Navigation on page 77
- Preferences on page 78

Interface Components

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

- Menus below
- Toolbars on the facing page
- Views on page 58

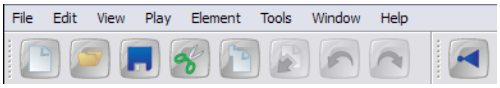
Menus

Studio has two kinds of menus:

- Top Menu below
- Quick Access Menu below

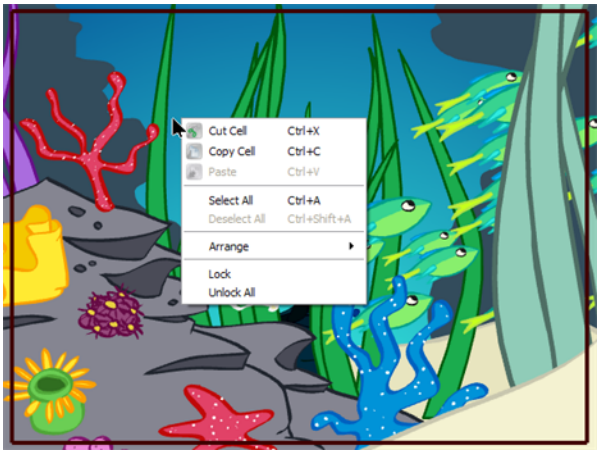
Top Menu

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 find most of the commands that are used throughout your 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 in the view in which you are working to display it.

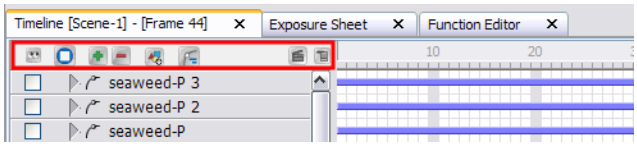
There are a series of Quick Access menus throughout the interface. Here is a list of the main ones:

- 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. Toolbars are found at the top and left side of the interface, and 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 are:

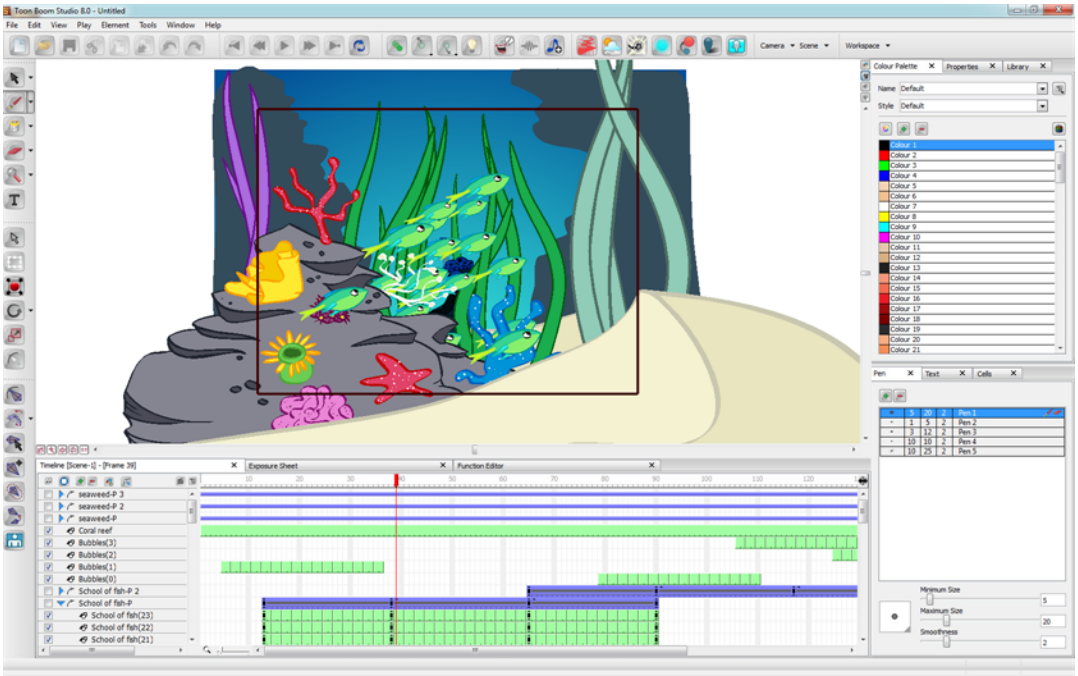
- Main Toolbar (Windows)
- Drawing Tools Toolbar
- Animation Tools Toolbar
- Bone Tools Toolbar
- Effects Toolbar
- Interactive Playback Toolbar (Windows)
- Grid Control Toolbar (Windows)
- Onion Skin Toolbar (Windows)
- Peg Toolbar (Windows)
- Scene View Toolbar (Windows)
- Sound Toolbar (Windows)
- Workspace Toolbar
- Exposure Sheet Toolbar
- Timeline View Toolbar

To customize the top toolbar for Mac OS X, refer to Customizing Toolbars on Mac OS X on page 73.

Views

Toon Boom Studio's interface is composed of several different views used to perform different actions. The main views you use for your project are the Camera and Timeline views.

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
- Storyline View
- Side View

- Text View
- Timeline View
- Top View

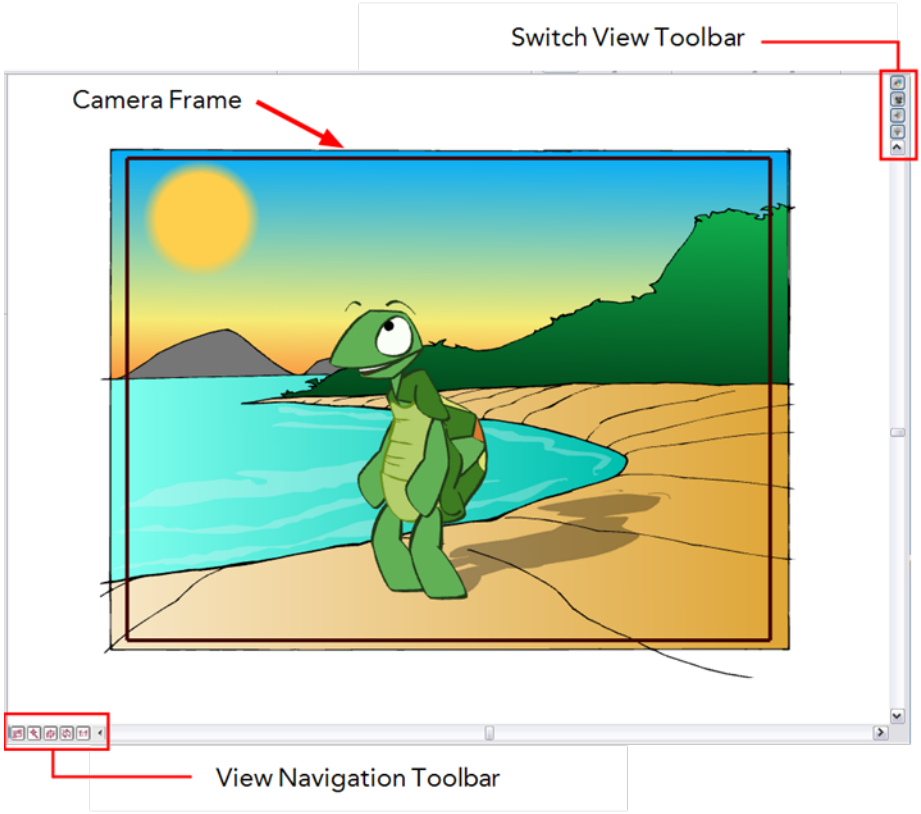
Interface Highlights

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

In this topic, you will learn about the followings:

- Camera View below
- Timeline View on page 62
- Drawing Tools Toolbar on page 63
- Animation Tools Toolbar on page 63
- Timeline View Toolbar on page 62

Camera View



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

In the Camera view, you also find two toolbars:

- View Navigation Toolbar on the facing page
- Switch View Toolbar on the facing page

View Navigation Toolbar

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

Icon	Tool Name	Description	Shortcut
	Switch between Two Views	Switches between the two last zoom levels you used. For example, if you zoom in on a drawing and then zoom out to a global view, clicking this button switches between the close up and the global zoom levels.	[B]
	Reset Zoom and Pan	Resets any zoom, rotation and pan action you did while navigating in the Camera view working area. The camera frame will be re-centred in the Camera view. Note that it does not reset any positioning you may have done on your drawings and images.	[Shift] + [V]
	Recentre the Active View	Centres the camera frame in the Camera view. Any rotation or zoom action will remain the same.	[Shift] + [Space]
	Reset the Rotation of the Window	Resets 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 any positioning you may have done on your drawings and images.	[Shift] + [C]
	Reset the Zoom Level of the Window	Resets 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 any positioning you may have done on your drawings and images.	[Shift] + [Z]

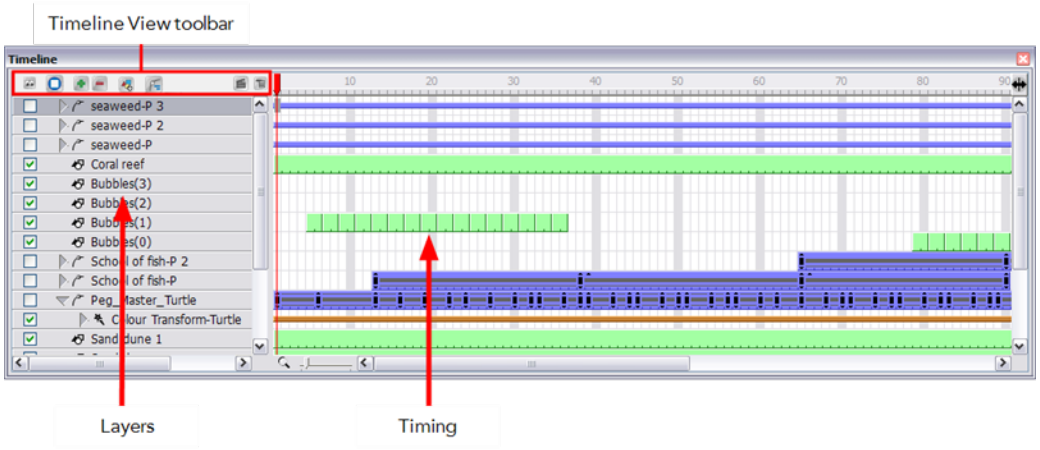
Switch View Toolbar

In the Switch View toolbar, there are 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 Window menu.

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 eight different buttons allowing you to add, enable and disable layers as well as switching between the different scenes of a same project.

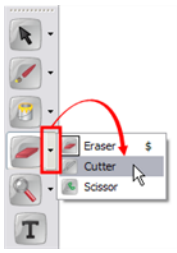
Icon	Name of tool	Description
	Show/Hide All	Switches between showing and hiding all layers in the Timeline view.
	Solo Mode	Lets you see only the currently selected layer, as well as the layer that was selected when you enabled the Solo Mode. This lets you use it as a reference without having to disable all the other layers.
	Add New Elements	Adds a new element (layer) to the timeline. When you click 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	Deletes the selected layers in the timeline. **Note**: If you delete a layer with other layers connected to it, all the layers will be deleted at the same time. Also, if you only have one layer in the 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	Adds a drawing layer in the Timeline view. You can then double-click the new drawing layer to rename it.
	Add Parent Peg	Adds a peg layer in the Timeline view and connects it to any selected layer. You can then double-click the new peg layer to rename it.

	Scene Menu	Cycles through the different scenes in your project.
	Timeline View Menu	Displays a menu of commands related only to the Timeline view.

Drawing Tools Toolbar

The Drawing Tools toolbar contains all of the different tools you need to draw and design your artwork. Some extra commands are located 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.

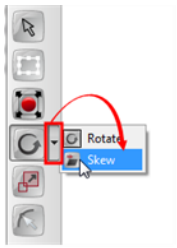


Refer to the Drawing and Design on page 81 chapter to learn more about the drawing tools.

Animation Tools Toolbar

The Animation Tools toolbar contains all of the different tools you need to position and animate your layers.

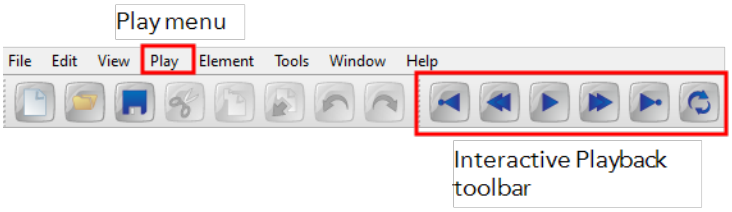
Some of the buttons in the toolbar have a black drop-down arrow, this lets you open a menu with extra Animation tools.



Refer to the Setting the Scene on page 277 chapter to learn more about the Animation tools.

Interactive Playback Toolbar and Play Menu

You can play back animation and sound by using the Interactive Playback toolbar or the Play menu (in top menu).



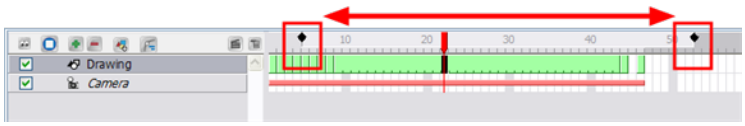
Interactive Playback Toolbar

Icon	Tool Name	Description	Play menu	Shortcut
	Play/Stop	Plays or stops playback	Play > Play or Play > Stop	[P]
	Loop	Repeats playback indefinitely	Play > Loop	
	Previous Frame	Go to the previous frame	Play > Previous Frame	[A]
	Next Frame	Go to the next frame	Play > Next Frame	[S]
	First Frame	Go to the first frame	Play > First Frame	
	Last Frame	Go to the last frame	Play > Last Frame	

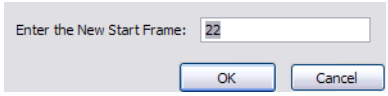
Play Menu

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

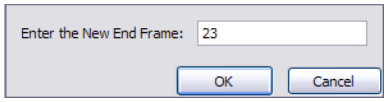
- **Frame Rate**: Lets you choose the playback speed of your animation. By default, the option is set to use the same playback speed you set in your Animation Properties when you created the project. In the drop-down menu, you can change it to 1, 2, 12, 24 or 30 frame per second.
- **Force Frame Rate**: Forces 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 drops images rather than playing back all images at a slower pace.
- **Playback Range**: Specifies 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 **Play > Playback Range > Change the Playback Start Frame** to type the number of the first frame of the playback range.



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



- **Preview Movie**: Exports a QuickTime movie of the entire animation project including all its scenes. You can press [Ctrl] + [Shift] + [Enter] (Windows) or [⌘] + [Shift] + [Enter] (Mac OS X).
- **Preview Scene**: Exports a QuickTime movie of your current scene, ignoring the other scenes in the project. You can press [Ctrl] + [Enter] (Windows) or [⌘] + [Enter] (Mac OS X).
- **Preview Exposure Sheet**: Exports 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. You can press [Ctrl] + [Alt] + [Enter] (Windows) or [⌘] + [Alt] + [Enter] (Mac OS X).
- **Preview Exposure Sheet Selection**: Exports 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 setup done in the Camera view. You can press [Shift] + [Enter].
- **Turn Off/On Sound Playback**: Enables or disables the sound while playing back the scene.
- **Turn Off/On Sound Scrubbing**: Enables or disables 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**: Exports a Flash SWF movie of your current scene ignoring the other scenes in the project. You can press [Enter].

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.

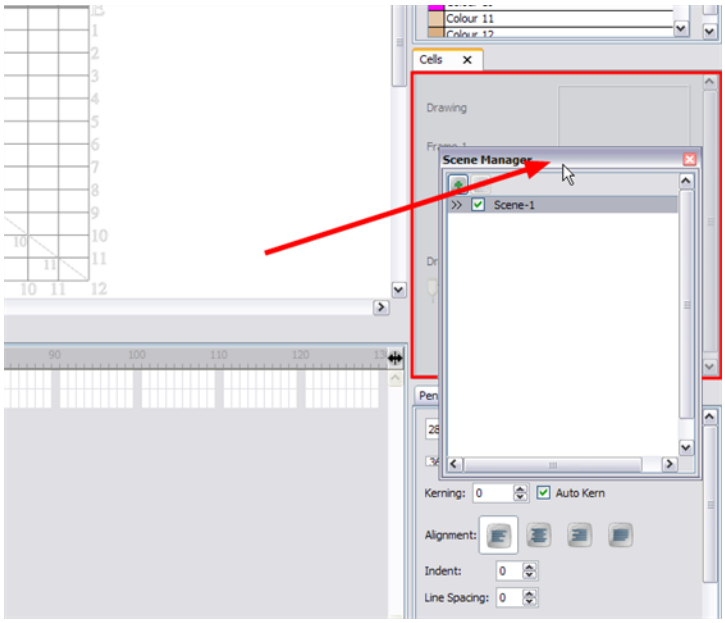
This section covers the following topics:

- Adding a New View below
- Closing a View on the facing page
- Swapping Views on page 70
- Resizing a View on page 71
- Showing and Hiding the Status Bar on page 71
- Extending the Side Panel on page 72

Adding a New View

To add a view:

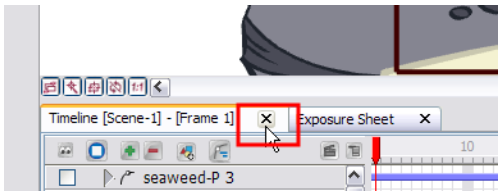
1. Select the view you want to add from **Window >** *the desired view*.
2. If your view appears as a floating window and you want to dock it to your workspace, drag the window's tab onto one of the workspace's views.
   - To insert your view into an existing area, wait until the zone is highlighted (Windows), then drop 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:

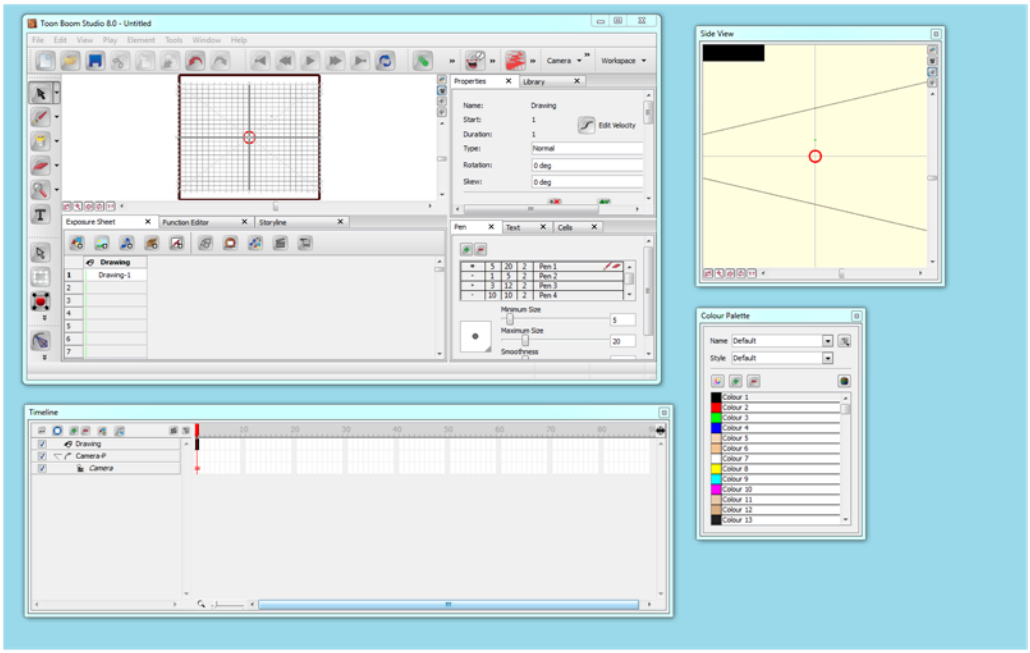
1. Click the **X** (close view) button.



Undocking and Docking Windows and Views

In Toon Boom Studio you can rapidly dock, undock, or move windows and views around the interface and your desktop. This makes it easier for you to organise your workspace and obtain the maximum use from the available desktop real estate.

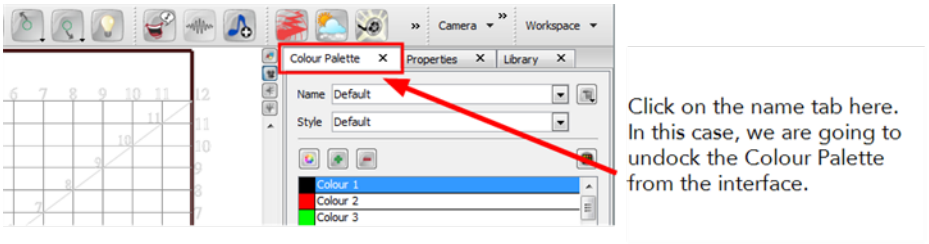
In fact, if you have a dual monitor setup, you can drag it away from the Studio interface and place it on the second monitor's desktop.



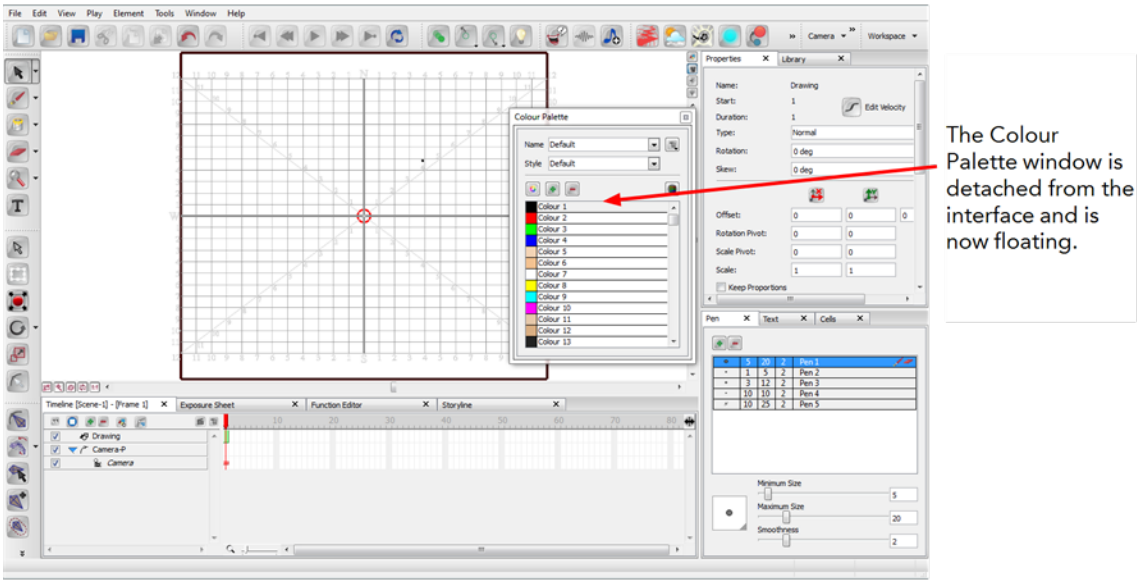
Undocking

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

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



The window detaches automatically from its docked position and appears floating in the interface.

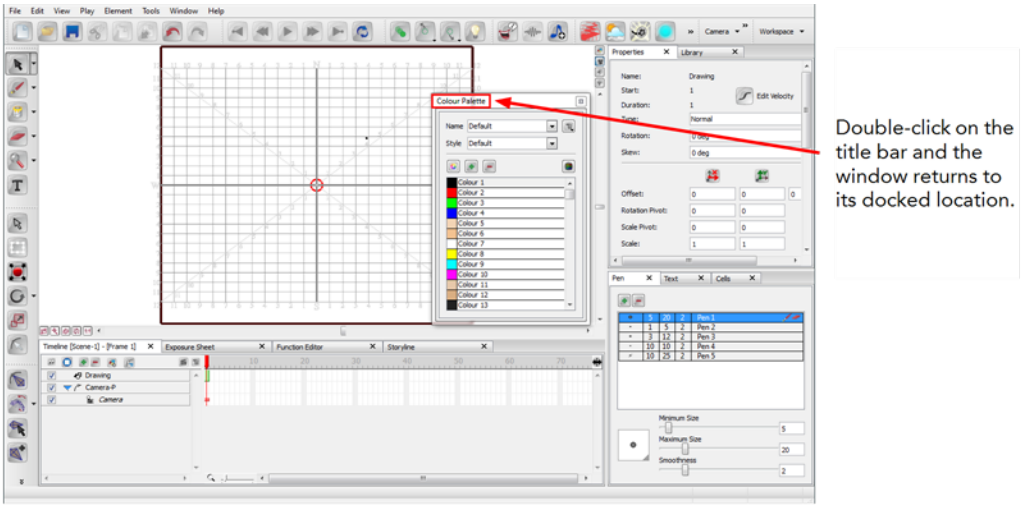


2. Once you have detached the window, you can resize it to fit your work needs.

Docking

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

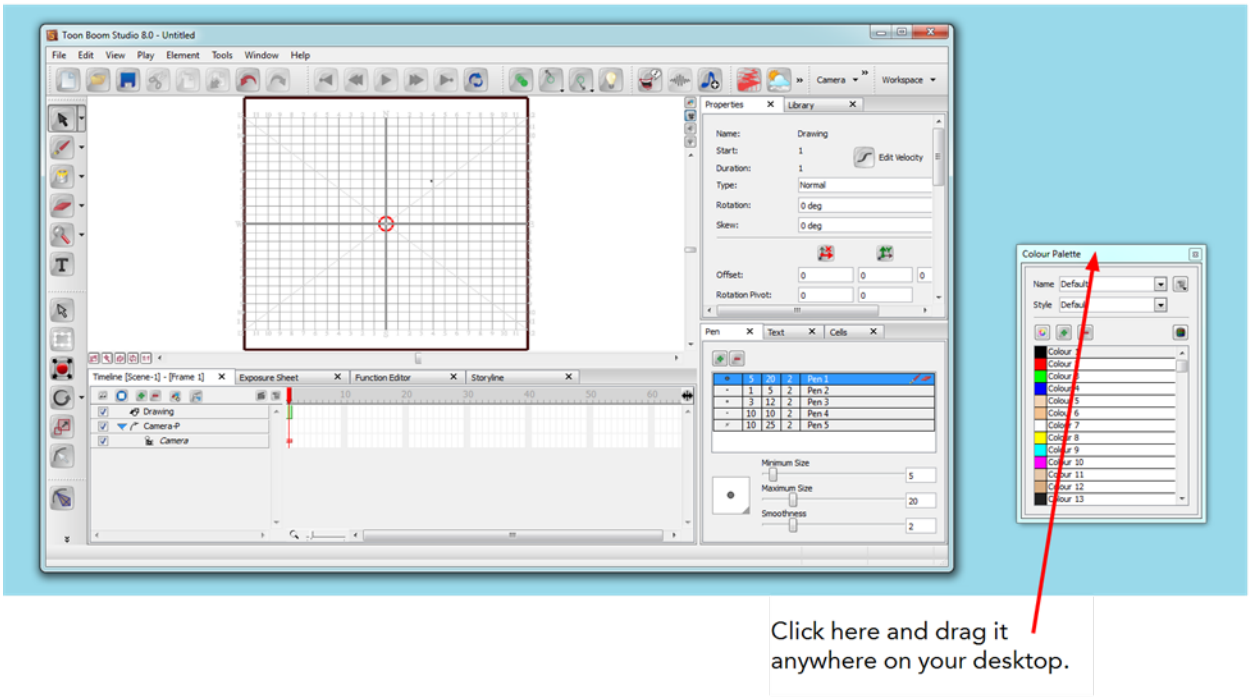
1. Double-click on the floating window's title bar. The window returns automatically to the docked location.



Next time you double-click on that window's name tab, it undocks and returns 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.



To move the floating window around the desktop:

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

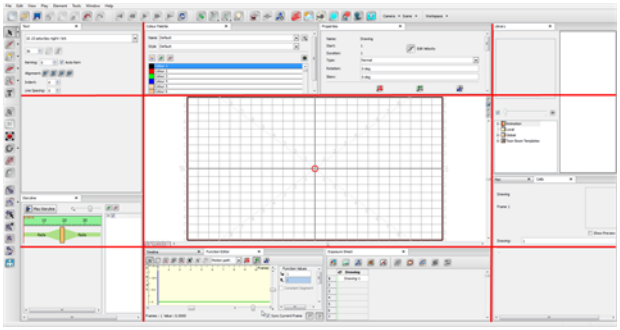
   Next time you double-click on that window's name tab, it undocks and returns to its last location on your desktop.

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.

You can drop views on either side, above and below the Camera view. Your layout can have one columns on the left, one column on the right, one column on top and one below the Camera view. You cannot have two columns on either side.

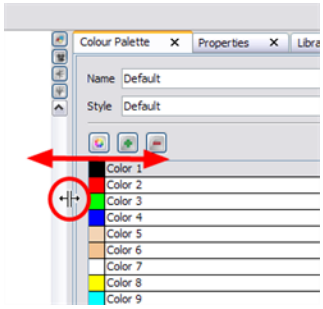


Resizing a View

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

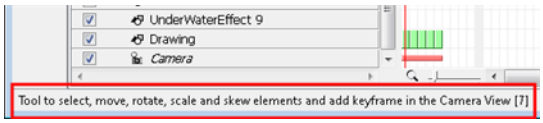
To resize a view:

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. Windows and Mac OS X do not show the same information.



To show or hide the Status bar:

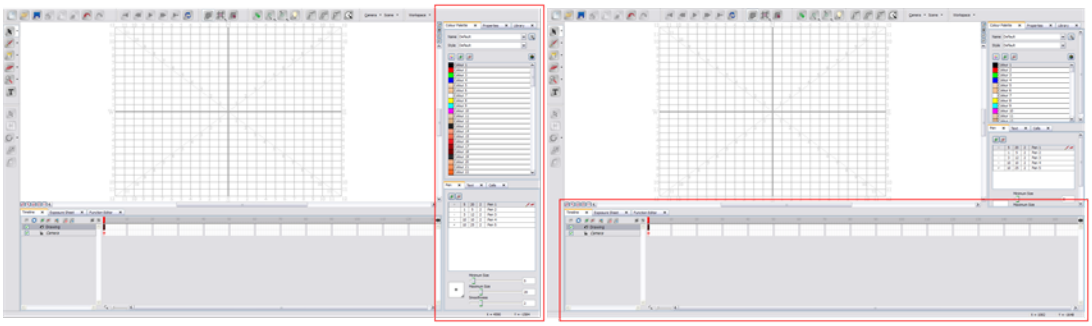
1. Select **Window > Show/Hide Status Bar**.

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 take 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 below
- Moving Toolbars on Windows below
- Customizing Toolbars on Mac OS X below

Showing or Hiding Toolbars

To show or hide a toolbar:

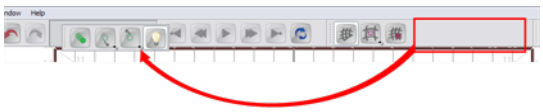
1. Select **Window > Toolbar >** *the desired toolbar*.

Moving Toolbars on Windows

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.



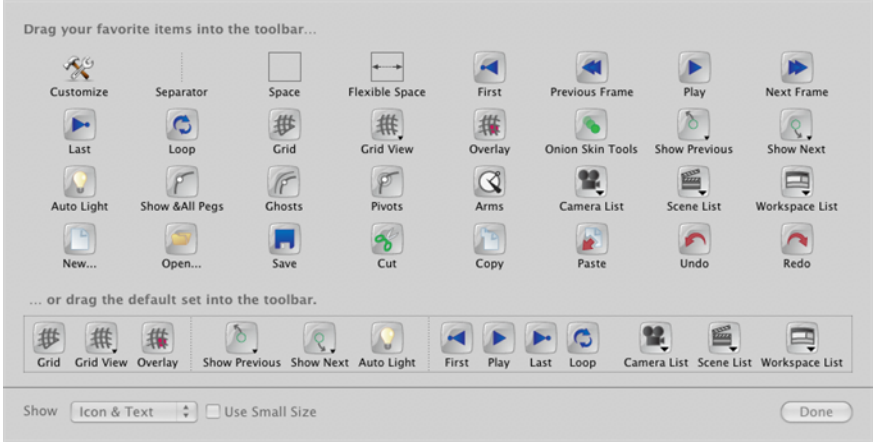
Customizing Toolbars on Mac OS X

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 Studio displays large buttons. You can enable the Use Small Icon option to switch to smaller buttons.
5. When you are finished making changes, click **Done**.
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 below
- Creating a Workspace below
- Renaming a Workspace on the next page
- Saving a Workspace on the next page
- Deleting a Workspace on the next page

Loading a Workspace

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

To load a workspace:

1. In the top menu, select **Window > Workspaces** and select a workspace from the list. You can also select the same option in the Workspace toolbar (Top toolbar on Mac OS X).

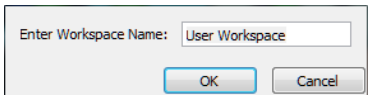
There are several useful workspaces available in the list. One of them, the Full Screen Drawing is automatically set to Full Screen to allow a larger drawing space. To exit the Full Screen mode, select **View > Turn Off Full Screen** or press [Ctrl] + [F] (Windows) or [⌘] + [F] (Mac OS X).

Creating a Workspace

To create a workspace:

1. Reposition the views and toolbars the way you want them in your new workspace.
2. Select **Window > Workspaces > New Workspace**. You can also select the same option in the Workspace toolbar (Top toolbar on Mac OS X).

   The workspace dialog box opens.



3. Rename your new workspace.
4. Click OK.

   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 (Top toolbar on Mac OS X).
2. Select **Window > Workspaces > Rename "current workspace's name"**. You can also select the same option in the Workspace toolbar (Top toolbar on Mac OS X).

   The Rename Workspace dialog box opens.

3. Rename the workspace.
4. Click OK.

Saving a Workspace

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

To save a workspace:

1. Select **Window > Workspaces > Save"*workspace's name*"**. You can also select the same option in the Workspace toolbar (Top toolbar on Mac OS X).

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 <*workspace name*>.** You can also select the same option in the Workspace toolbar (Top toolbar on Mac OS X).

Restoring the Default Workspaces

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

To restore the default workspaces:

1. Select **Window > Workspaces > Restore <*workspace name*>** You can also select the same option in the Workspace toolbar (Top toolbar on Mac OS X).

Interface Navigation

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

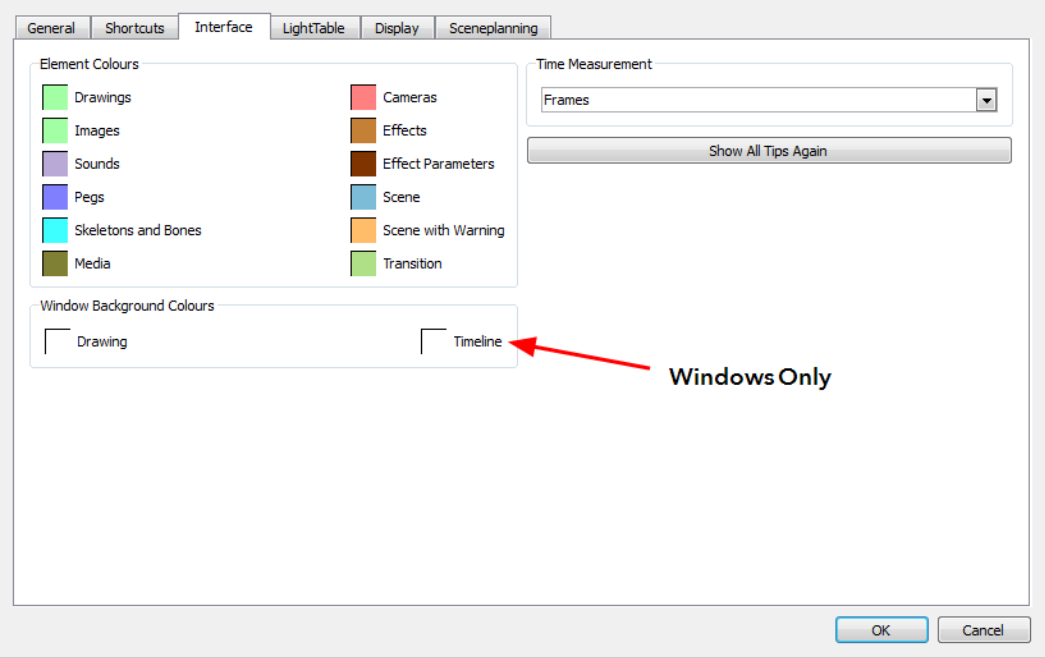
Command	Action	Access Methods
Zoom In	Zooms into the view.	**View > Zoom In** Press [X].
Zoom Out	Zooms out of the view.	**View > Zoom Out** Press [Z].
Pan	Hold down the keyboard shortcut [Spacebar] and drag your mouse in the direction you want to pan the view.	
Rotate Clockwise		**View > Rotate Clockwise**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

Preferences

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

Interface Preferences

To customize your interface, open your preference panel and select the interface tab.



Element Colours

Double-click on the colour swatches to modify the colour of the different elements listed in the section. For example, you can change 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 want to have white as a background colour and would prefer to use a grey colour, change the colour swatch to grey.

Show All Tips Again

Toon Boom Studio prompts you to provide information about certain situations. You can select the Do Not Show This Message Again option to avoid getting message prompts.

If you want to see these messages, click **Show All Tips Again**.

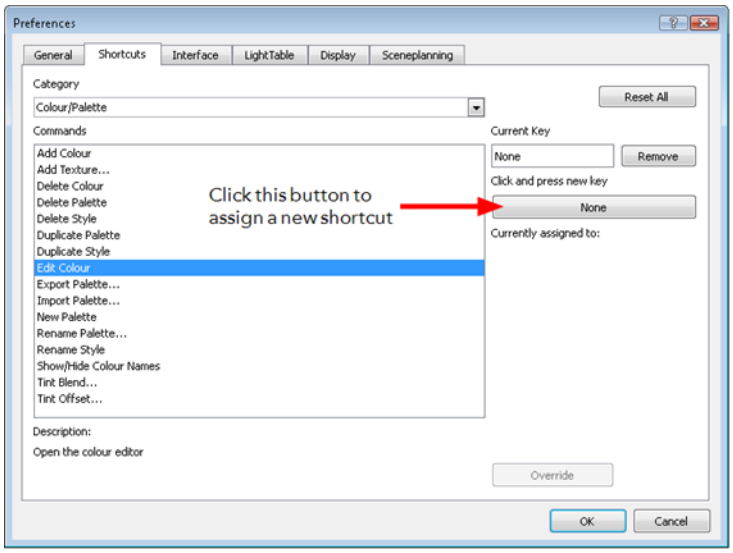
Keyboard Shortcuts

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

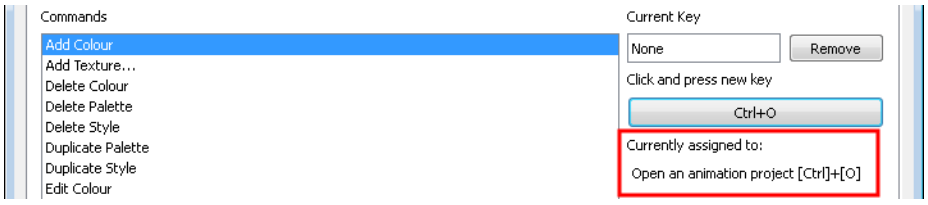
You can customize most of the shortcuts by opening the Preferences panel and going to the Shortcuts tab.

To set a shortcut:

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

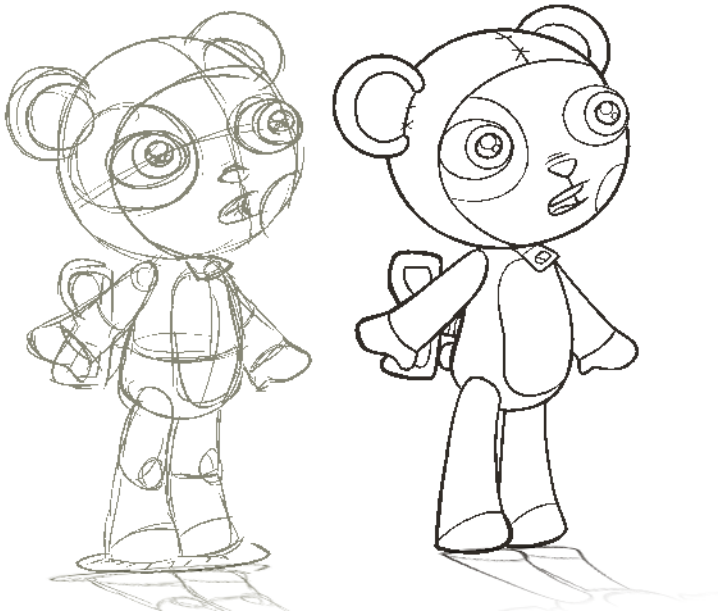


6. On your keyboard, press on the desired key for the new shortcut.
   - To remove any keyboard shortcut associated with a command, click **Remove**.
   - To reset all the keyboard shortcuts to their default values, click **Reset All**.
7. If a keyboard shortcut is already in use, a message appears in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



   - Click Override to ignore the previous association and assign the shortcut to the selected command. The other command's shortcut is set to None.
   - If you click the OK button before overriding the shortcut assignation, the action is cancelled.
8. Click OK.

Chapter 4: Drawing and Design



This chapter explains the main options, features and tools you will need when drawing and designing in Toon Boom Studio.

In this chapter, you will learn about the following:

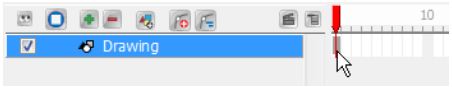
- Drawing Basics on the next page
- Drawing in the Drawing or Camera View on page 83
- Drawing Using the Brush or Pencil Tool on page 85
- Relative Sizes of Characters and Props on page 88
- Sketching on page 90
- Tracing on page 92
- Erasing Part of a Drawing on page 95
- Selecting Drawing Objects on page 96
- Pen View on page 99
- Drawing Invisible Lines on page 104
- Working With Text on page 106
- More Drawing Tools on page 109
- More Drawing Options on page 117
- Preferences on page 123

Drawing Basics

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

How to draw:

1. Click the Drawing View button in the top-right corner of the main window.
2. In the Drawing Tools toolbar, select the Brush tool or press [@].
3. In the Timeline or Exposure Sheet view, select the first cell in the drawing layer.



4. In the Drawing view, start drawing.

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 draw in the Drawing or 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 the Light Table to display the current frame drawing of all the visible layers of your scene in washed out colours, or the Onion Skin to display the previous and next drawings of the currently selected drawing layer.

To switch to the Drawing view:

- Click the Drawing View button in the top-right corner of the main window.

Camera View

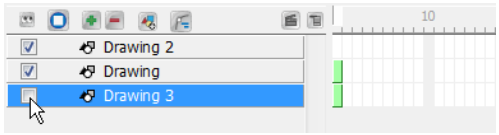
By default, all the visible layers drawing of the selected frame are displayed in the Camera view. The selected drawing is automatically displayed on top when you are using a drawing tool to edit a drawing. You can also use the Onion Skin tool to display the previous and next drawings of the selected drawing layer.

To switch to the Camera view:

- Click the Camera View button in the top-right corner of the main window.

To hide and show layers in the Timeline view:

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



- A selected checkbox means that the layer is visible.
- A deselected checkbox means that the layer is hidden.

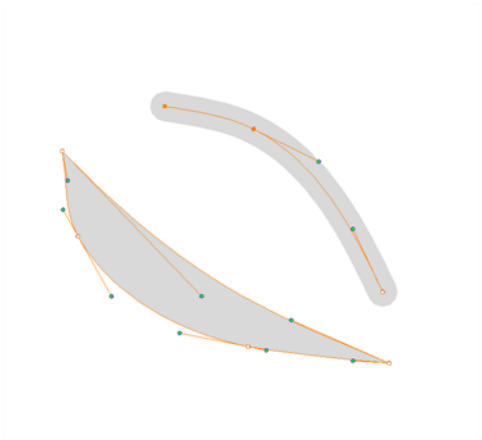
If you have a single drawing layer in the Timeline view and it is deselected, and you then select that layer, its contents will display in the Camera view even if deselected. When you have two layers or more, deselected and selected layers will not display its contents.

To show or hide all layers in the Timeline view:

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

Refer to Traditional Digital Animation on page 233 to learn more about the Onion Skin tool.

Drawing Using the Brush or Pencil Tool



The Brush and Pencil tools are used for drawing and sketching.

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 Pen View on page 99 to learn more about setting the Brush tool parameters.

To select the Brush tool:

- In the Drawing Tools toolbar, select the Brush tool.
- Select **Tools > Drawing Tools > Brush**.
- Press [@].

Pencil Tool

The Pencil, Polyline and Shape tools let you 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 Pen View on page 99 to learn more about setting the Pencil tool parameters.

To select the Pencil tool:

- In the Drawing Tools toolbar, select the Pencil tool.
- Select **Tools > Drawing Tools > Pencil**.
- Press [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. Do one of the following:
   - From the Drawing Tools toolbar, select the Select tool.
   - Select **Tools > Drawing Tools > Select**.
   - Press [!].
2. In the Drawing or Camera view, select the pencil line to convert and select **Tools > Convert Lines to Brush**.

Refer to More Drawing Tools on page 109 to learn more about the Contour Editor tool.

Extract Centre Line - Converting a Brush Shape to a Pencil line

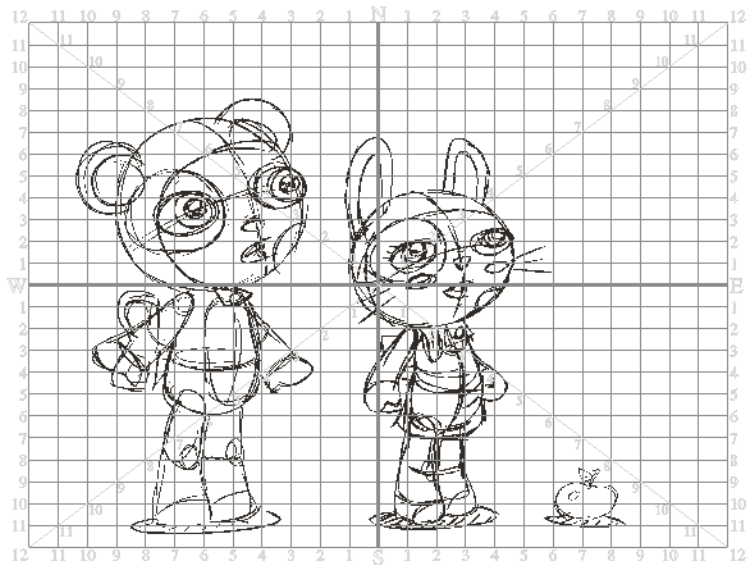
You can convert a brush shape into a pencil line using the Extract Centre Line option.

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. Do one of the following:
   - From the Drawing Tools toolbar, select the Select tool.
   - Select **Tools > Drawing Tools > Select**.
   - Press [!].
2. In the Drawing or Camera view, select the brush zone you want to convert and select **Tools > Extract Centre Line**.

Relative Sizes of Characters and Props



Your project can contain many characters and props. When characters are placed together in a scene, notice that they may be 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 Animation 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 the original un-resized character 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 Drawing views. This is useful when determining the proportions between characters and props in a scene.

To display the grid when working in the Camera or Drawing view:

- From the Grid Control toolbar, click the Show Grid button or select **View > Grid > Show Grid**.

To select the grid units when working in the Camera or Drawing view:

With the grid displayed, click and hold the grid unit button in the Grid Control toolbar to display the other grid unit options and choose one of the following:

- **Normal**: Sets the grid units to squares. You can also select **View > Grid > Normal**.

- **12 Field**: Sets the grid units to rectangles for a 12 field grid. You can also select **View > Grid > 12 Field**.
- **16 Field**: Sets the grid units to rectangles for a 16 field grid. You can also select **View > Grid > 16 Field**.

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

To display the grid as an overlay:

1. In the Grid Control toolbar, click the Overlay button or select **View > Grid > Overlay**. When the button appears pushed in, the grid is displayed as an overlay.
2. In the Grid Control toolbar, click the pushed-in Overlay button or select **View > Grid > Underlay** to switch back to the underlay grid display mode.

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. When working in the Camera view, the grid is only displayed if a Drawing tool is selected.

Sketching

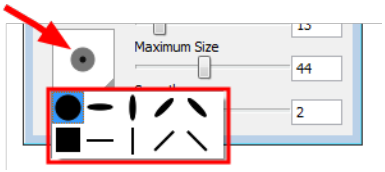
A sketch is a rough version of your design. When you sketch a rough of a new design for a character, you can produce whatever you imagine without being concerned about the final look of your lines. Making a rough version of your character helps you build a solid base shape and come up with some new design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

To make a sketch:

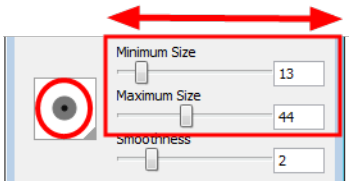
1. In the Drawing Tools toolbar, select the Brush tool or press [@].

2. In the Pen view, set the look of the brush:

   - Click the Brush Preview area and select a brush shape.

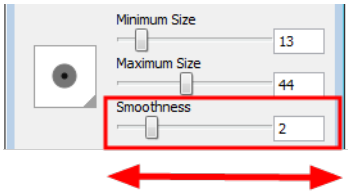


   - Use the sliders to set the Minimum and Maximum brush sizes.

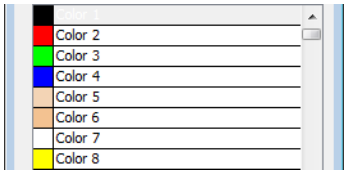


   As you set your brush size, the Brush Preview area displays the Minimum size of the brush in black and the Maximum size in dark grey.

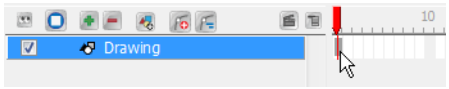
   - You can also set the Smoothness value of the Brush tool. Use this option to smooth out the brush stroke after you trace it. The higher the value, the more smoothness will be applied to your line.



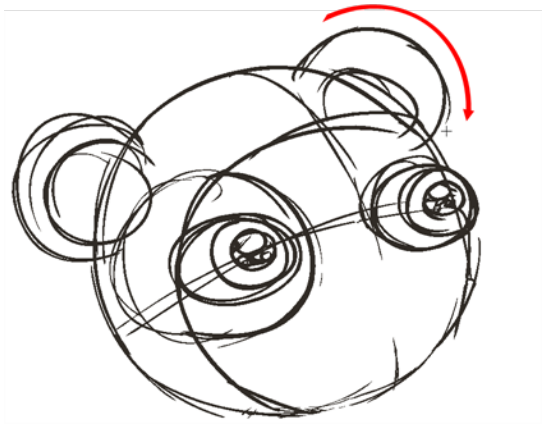
3. In the Colour view, select a default colour swatch to change the colour of the Brush tool.



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



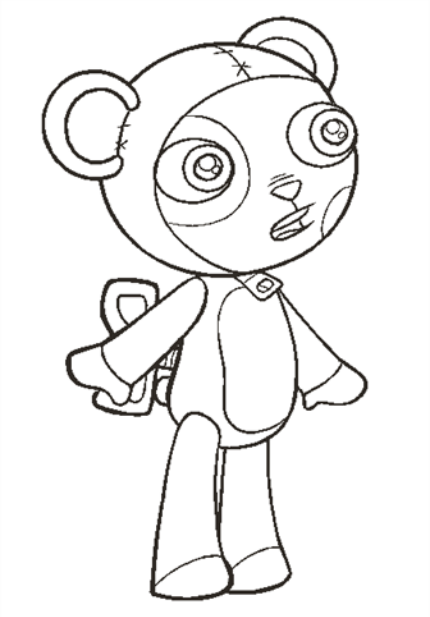
5. In the Drawing view, sketch your character.



Related Topics

- Adding Colours on page 125
- Pen View on page 99

Tracing



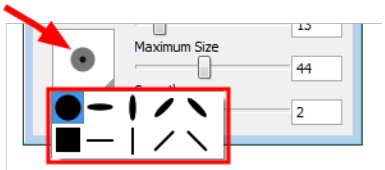
Once you have sketched a rough version of your design, the next step is to trace it. Tracing lets you determine the final look and line style of your drawing. Toon Boom Studio has many tools available for you to trace and perfect your drawing line.

To trace a drawing:

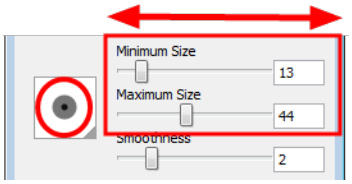
1. In the Drawing Tools toolbar, select the Brush tool or press [@].

2. In the Pen view, set the look of the brush:

   - Click the Brush Preview area and select a brush shape.

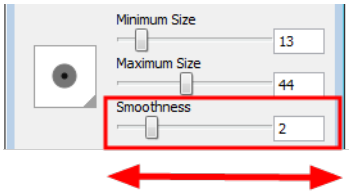


   - Use the sliders to set the Minimum and Maximum brush sizes.

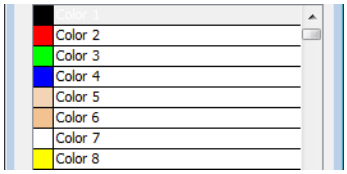


   As you set your brush size, the Brush Preview area displays the Minimum size of the brush in black and the Maximum size in dark grey.

   - 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.

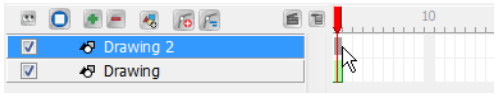


3. In the Colour view, select a default colour swatch to change the colour of the Brush tool.



4. In the Timeline or Exposure Sheet view, click the Add Drawing Element button to add a new drawing layer.

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



6. To see your sketch as a reference, do one of the following:

   - In the Onion Skin toolbar, click the Auto Light Table button.
   - Select **View > Turn Auto Light Table On**.
   - Press [L].

   Your sketch drawing layer appears washed-out in the Drawing view.

7. Sometimes it helps to hide elements, specially when there are many drawing layers. You can hide elements in the Drawing view using the Exposure Sheet view, so 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**.
- To hide all the drawing columns except the currently selected ones, select **Element > Display > Exposure Sheet > Hide All Others**.
- To show again the hidden columns, select **Element > Display > Exposure Sheet > Show All Exposure Sheet Elements**.

8. In the Drawing view, trace your character.

9. You can use the Rotary Table to rotate your workspace in the same way as you would rotate a sheet of paper you are 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] 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.

Related Topics

- Adding Colours on page 125
- Pen View on page 99
- More Drawing Tools on page 109

Erasing Part of a Drawing

The Eraser tool lets you change part or all of your drawing. It is pressure sensitive, just like the Brush tool.

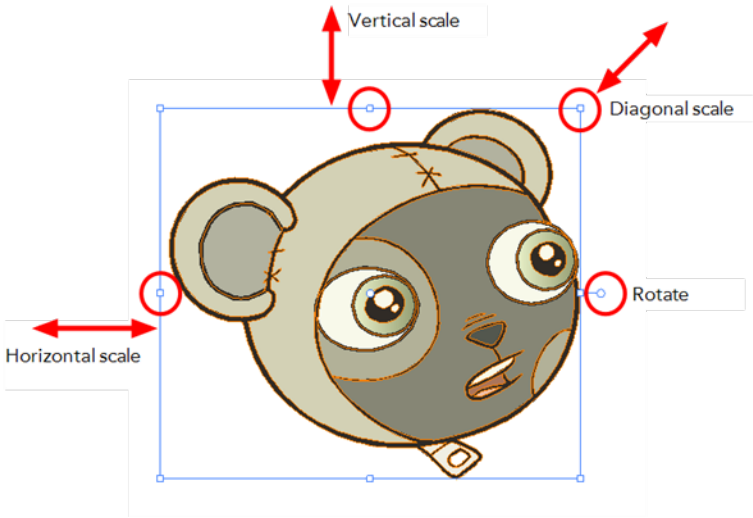
Pressure sensitivity provides more precision for erasing parts of a drawing. You can set its parameters in the Pen view, such as size, smoothness, and eraser shape—Setting Up the Brush and Eraser Tools on page 99.

To erase with the Eraser tool:

1. Do one of the following:
   - In the Drawing Tools toolbar, select the Eraser tool.
   - Select **Tools > Drawing Tools > Eraser**.
   - Press [$].
2. In the Drawing or Camera view, erase parts of the drawing.

You can also delete drawing objects by selecting them and pressing [Del].

Selecting Drawing Objects



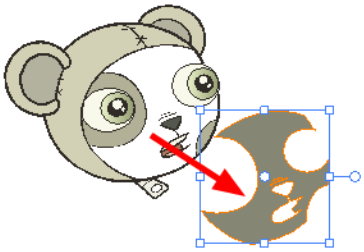
The Select tool is used to select drawing objects in the Drawing or Camera view and to apply basic transformations, such as repositioning, rotating or scaling, using the different handles of the bounding box.

To select with the Select tool:

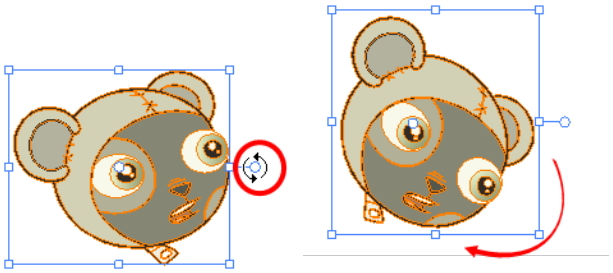
1. In the Drawing Tools toolbar, select the Select tool or press [!].
2. In the Drawing or Camera view, select the drawing objects.
   - Select all the drawing objects in a drawing by pressing [Ctrl] + [A] (Windows) or [⌘] + [A] (Mac OS X).
   - Switch to lasso selection mode by holding down [Ctrl] (Windows) or [⌘] (Mac OS X).

To deform or reposition selected drawing objects:

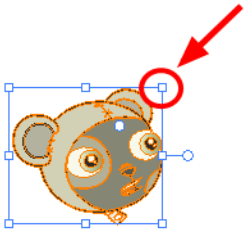
- To reposition, click the selected drawing object and drag the selection to a new area.



- To rotate, drag the selection box handle.

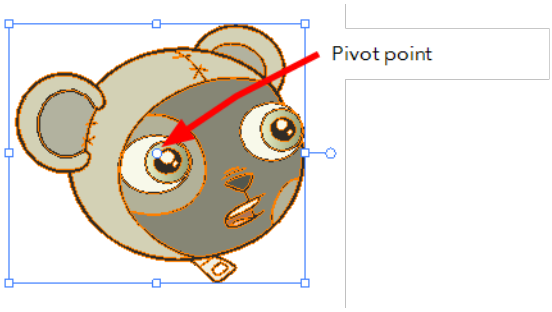


- To scale, pull or push the side, top, or corner control point.
  Hold down [Shift] to lock the scaling ratio.



While working with the Select tool, you can hold [Ctrl] (Windows) or [Alt] (Mac OS X) to temporarily switch to the Perspective tool, allowing further transformations—see Perspective Tool on page 113.

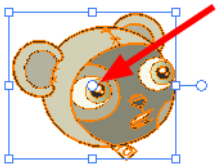
Repositioning a Pivot Point



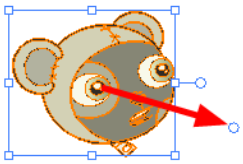
Some of the transformations such as rotation, scale and flip, are done using the position of the pivot point as the central point. By default, this pivot point is located in the centre of your selection. You can temporarily reposition this pivot point for a transformation using the Select tool.

To temporarily reposition the pivot point:

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



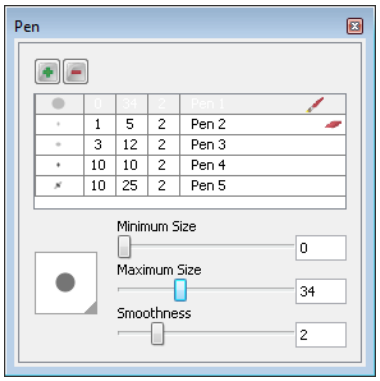
2. Click the pivot point and drag it to a new position.



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.

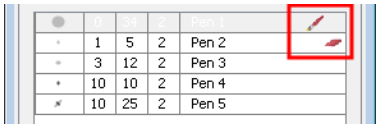


Setting Up the Brush and Eraser Tools

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. Unlike the Pencil tool, you can set a minimum and maximum brush size for this effect.

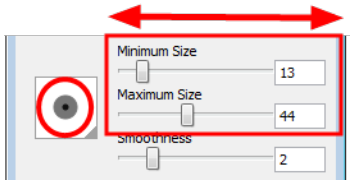
To set up the Brush or Eraser tool:

1. In the Drawing Tools toolbar, select the Brush or Eraser tool.
2. In the Pen view, select a pen style from the Pen Style list—see Managing Pen Styles on page 102.

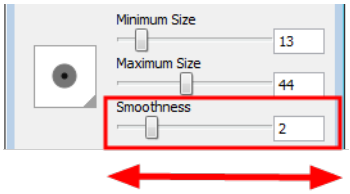


3. Use the Minimum Size and Maximum Size sliders to set the Minimum and Maximum brush sizes for the thick and thin effect.

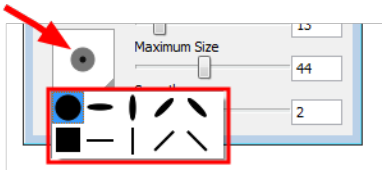
   As you set your brush size, the Brush Preview area displays the Minimum size of your brush in black and the Maximum size in dark grey.



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

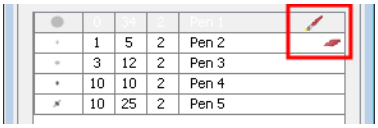


5. Click the Preview area and select a Brush tip shape from the menu.



Eraser and Brush Styles

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



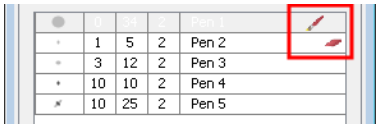
These markers show the active pen style linked to the Eraser tool, and the active pen style linked to the Brush, Pencil, Shapes and Polyline tools. When you switch from one type of tool to the other, the active pen style linked to it is automatically selected. This way you can quickly switch from the 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.

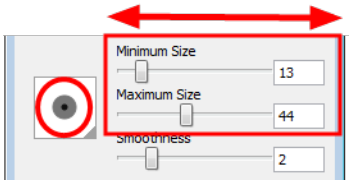
To set up the Pencil tool:

1. In the Drawing Tools toolbar, select the Pencil tool.
2. In the Pen view, select a pen style from the Pen Style list—see Managing Pen Styles on page 102.

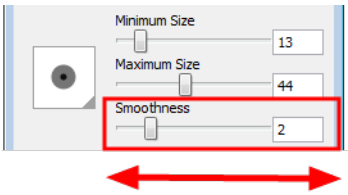


3. Use the Minimum Size and Maximum Size sliders to set the Minimum and Maximum brush sizes for the thick and thin effect.

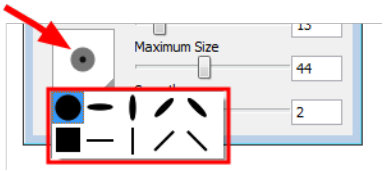
   As you set your brush size, the Brush Preview area displays the Minimum size of your brush in black and the Maximum size in dark grey.



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



5. Click the Preview area and select a Brush tip shape from the menu.



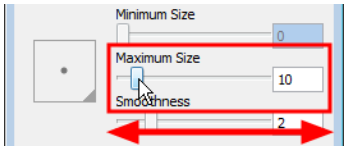
Setting Up the Shape Tools and Polyline Tool

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

To set the shapes and Polyline tools size:

1. In the Drawing Tools toolbar, select the Line , Ellipse , Rectangle or Polyline tool.

2. In the Pen view, use the Maximum Size slider to set the size of the tool.



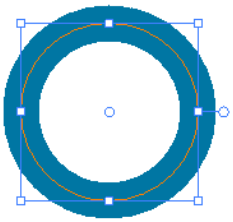
Changing the Thickness of a Centreline Object

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

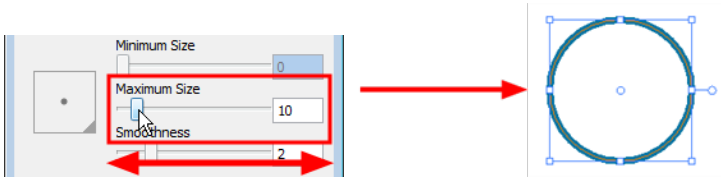
To resize a centreline object stroke:

1. In the Drawing Tools toolbar, select the Select tool or press [!].

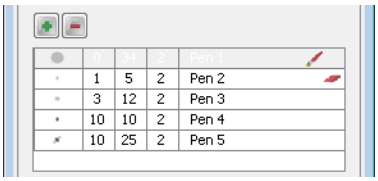
2. In the Drawing or Camera view, select the centreline drawing object whose thickness you want to change.



3. In the Pen view, use the Maximum Size slider to set the new line thickness.



Managing Pen Styles



There are five default pen styles you can use; each one can be edited. You can also add your own custom pen styles to the Pen Style list.

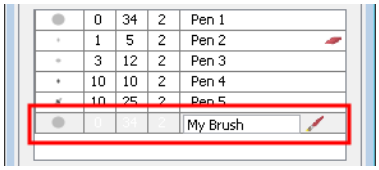
Adding a Pen Style

To create a pen style:

1. In the Pen view, click 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 the new pen style to rename it.

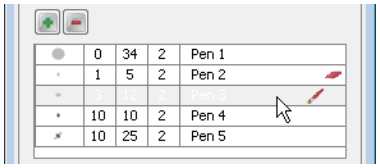


3. Set the desired values for your new pen style, such as Minimum and Maximum Sizes, Smoothness and Brush tip shape.

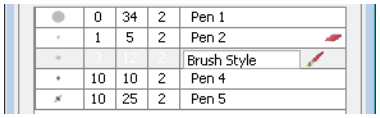
Editing a Pen Style

To edit a pen style:

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



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

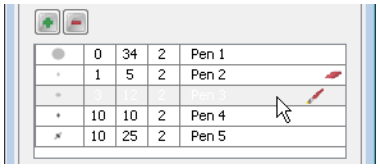


3. Set the new values for the pen style, such as Minimum or Maximum size, Smoothness, and Brush tip shape.

Removing a Pen Style

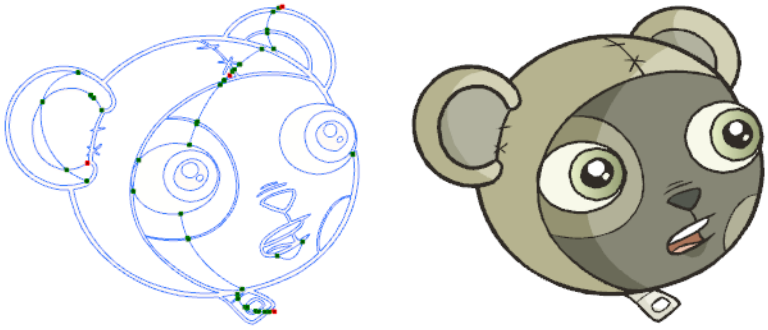
To remove a pen style:

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



2. Click the Remove Pen Style button.

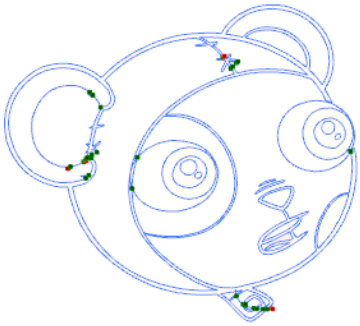
Drawing Invisible Lines



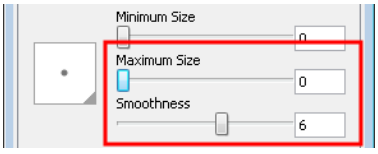
Using the Pencil tool, you can draw as strokes only, meaning that the line will be invisible. This can be useful for drawing tones and highlights directly on the character.

To draw invisible lines with the Pencil tool:

1. In the Timeline or Exposure Sheet view, select the cell on which you want to draw.
2. Do one of the following:
   - In the Drawing Tools toolbar, click the Pencil tool.
   - Select **Tools > Drawing Tools > Pencil**.
   - Press [2] to cycle through tools.
3. Select **View > Show Strokes** or press [K] to make 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—see More Drawing Tools on page 109.

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:

1. Do one of the following:
   - In the Drawing Tools toolbar, click the Stroke tool.
   - Select **Tools > Drawing Tools > Stroke**.
   - Press [3] to cycle through tools.

Working With Text

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

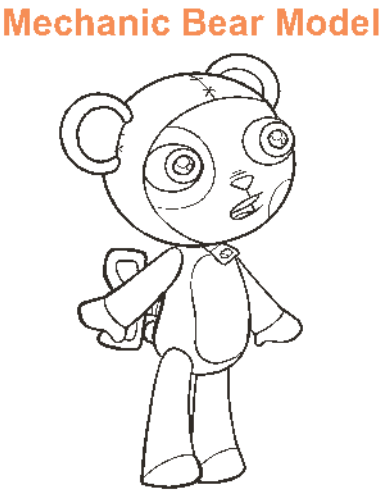
Creating Text

To add text to your drawings:

1. Do one of the following:
   - In the Drawing Tools toolbar, click the Text tool.
   - Select **Tools > Drawing Tools > Text**.
   - Press [T].
2. In the Timeline view, select the frame containing the drawing in which you want to add text.
3. In the Drawing or Camera view, click on the location you want your text to begin.

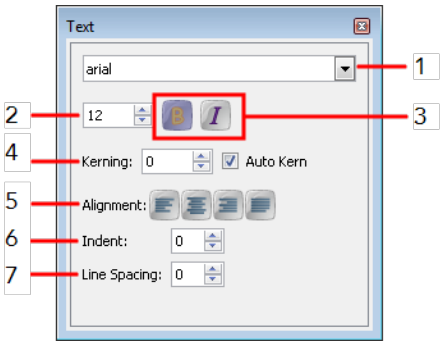
4. You can use the Text view to select the font, font size, and format of the text—see Formatting the Text on the facing page.
5. Type in the desired text.

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 tool and clicking in the text.



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:** Lets you select a font from the list of fonts available on 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 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
   - Centered
   - Right
   - Justified
6. **Indent:** Enter a value increase or decrease the amount of 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 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.

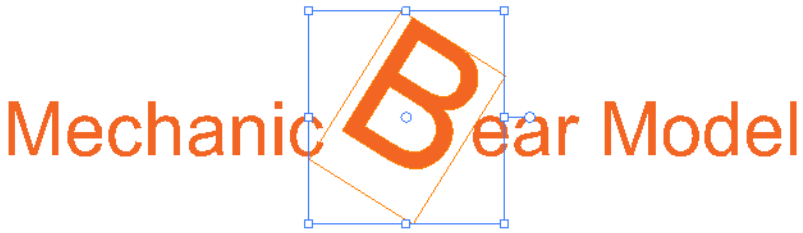
To break a text object:

1. In the Drawing Tools toolbar, click the Select tool or press [!].

2. In the Drawing or Camera view, select the text object you want to break.

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

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



4. Select **Tools > Break Text Apart** on a single character 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:

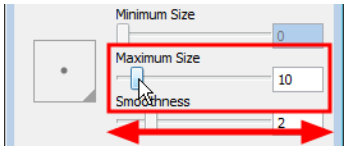
- Shape Tools below
- Polyline Tool on the next page
- Contour Editor Tool on page 111
- Perspective Tool on page 113
- Cutter Tool on page 114
- Scissor Tool on page 115

Shape Tools

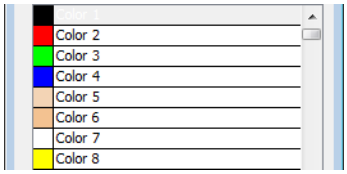
In Toon Boom Studio, you can use the shape tools to draw with circles, squares, or lines.

To draw with a shape tool:

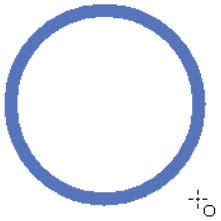
1. In the Timeline view, select the frame you want to draw in.
2. In the Drawing Tools toolbar, select a Shape tool:
   - **Ellipse tool**: You can also select **Tools > Drawing Tools > Ellipse** or press [2] to cycle through the tools.
   - **Rectangle tool**: You can also select **Tools > Drawing Tools > Rectangle** or press [2] to cycle through the tools.
   - **Line tool**: You can also select **Tools > Drawing Tools > Line** or press [2] to cycle through the tools.
3. In the Pen view, set the size of your shape's line using the Maximum slider.



4. Change the colour of the shape's line using the 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 ellipse ratio to 1:1to 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 using the Line tool.

Related Topics

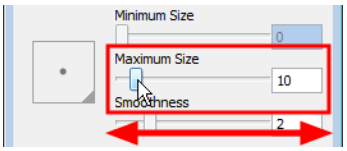
- Pen View on page 99
- Adding Colours on page 125

Polyline Tool

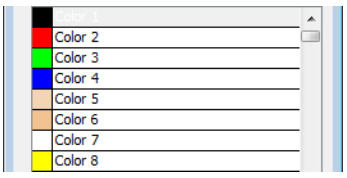
The Polyline tool lets you draw shapes, and like the Pencil and Shape tools, it is a central vector type of line. To form a shape, click to add points. Repeat until the shape is formed. To make curves, click and without releasing the mouse, drag to pull the handle in the desired direction before adding the next point.

To use the Polyline tool:

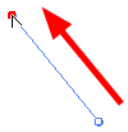
1. In the Timeline view, select the frame in which you want to draw a polyline shape.
2. Do one of the following:
   - In Drawing Tools toolbar, select the Polyline tool.
   - Select **Tools > Drawing Tools > Polyline**.
   - Press [2] to cycle through the tools.
3. In the Pen view, set the size of the polyline using the Maximum slider.



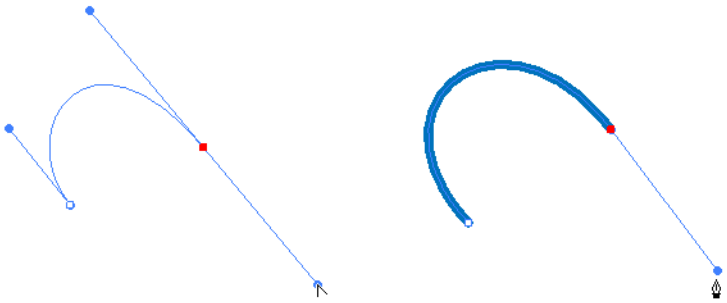
4. You can change the colour of the polyline using the colour swatches in the Colour view.



5. 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°.



6. Click again in a new area and drag to create a second point and Bezier handle.



7. Repeat the previous step until the shape is completed.
8. To close a shape so that there are no gaps:
   - Place your pointer over a point and click.
     An "o" appears when you add a point that will close a shape.

   - Place your pointer over any location on the shape you are drawing and click.
     A plus sign (+) appears when your pointer is over a spot you can use to close the shape.

9. To remove a control point on the line, press [Shift] and click on the point.
   A dash (-) appears when your pointer is over a point to delete.

10. If needed, use the Contour Editor tool to reshape the line—see Contour Editor Tool below.

Contour Editor Tool

The Contour Editor tool lets you correct line shapes and 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.

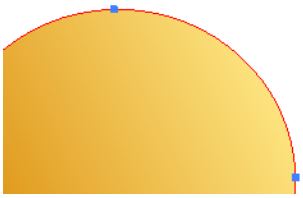
The Contour Editor tool displays the vector points around a shape and the central vector point in a pencil line. Pulling or Pushing on these points adjusts a brush line's thickness or a central vector shape.

To use the Contour Editor tool:

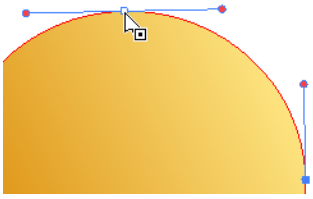
1. Do one of the following:
   - In the Drawing Tools toolbar, select the Contour Editor tool.
   - Select **Tools > Drawing Tools > Contour Editor**.

- Press [1] to cycle through the tools.

2. In the Drawing or Camera view, click on the shape's line or on a pencil line to edit it.

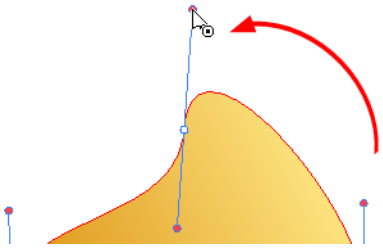


3. Select one point or several points by clicking on them or circling around them.

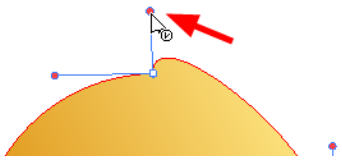


4. To modify the shape, you can:

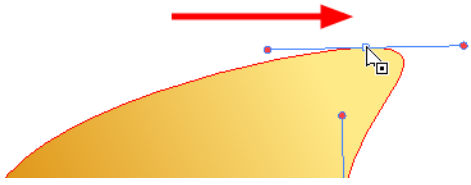
- Pull on the Bezier handle. Both point's handles will move as one.



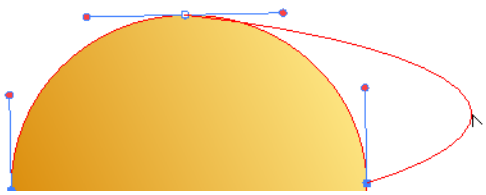
- Hold down [Alt] (Windows) or [⌘] (Mac OS X) and pull on one of the Bezier handles. The point's handles will move independently from the other one.



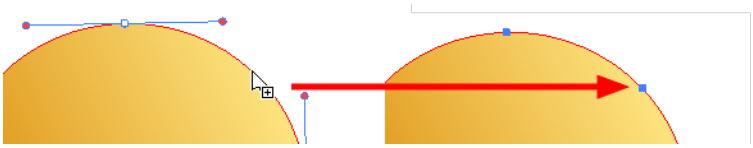
- Move the selected points to a new area.



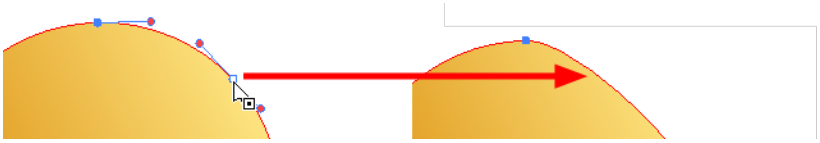
- Pull directly on the line between two points. No selection is necessary.



- 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 [Del] to delete it.

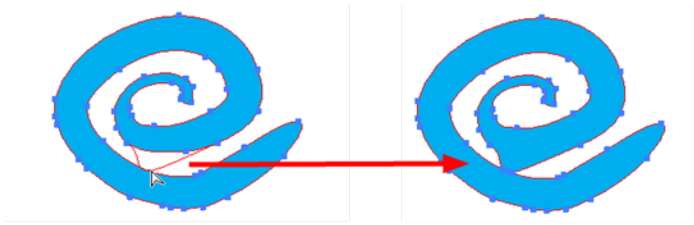


Snap to Contour

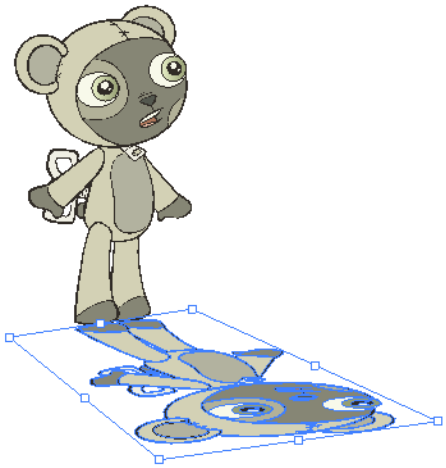
When using the Contour Editor tool, you can snap the selected control point to the vector line.

To snap a control point to the vector line:

1. In the Drawing Tools toolbar, select the Contour Editor tool.
2. Select **Tools > Snap to Contour**.
3. Select a control point and as you move it, it is attracted to the contour lines. Releasing the point on the line snaps it to it.



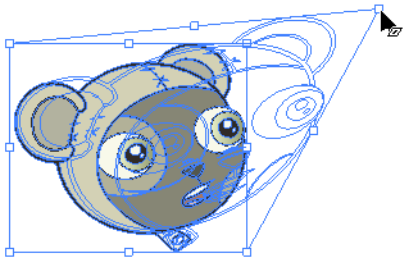
Perspective Tool



The Perspective tool lets you deform a selection and alter its perspective.

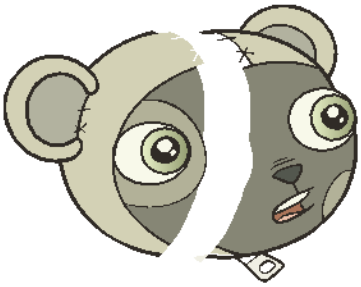
To deform a drawing object:

1. Do one of the following:
   - In the Drawing Tools toolbar, select the Perspective tool.
   - Select **Tools > Drawing Tools > Perspective**
   - Press [1] 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 temporarily switch to the Perspective tool by holding [Ctrl] (Windows) or [Alt] (Mac OS X) while using the Select tool—see Selecting Drawing Objects on page 96.

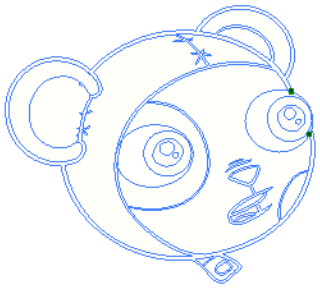
Cutter Tool



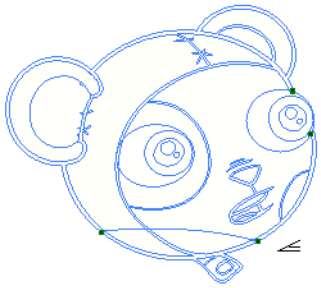
The Cutter tool lets you cut a part of your drawing and separate it from the rest. A vector stroke is created that lets you split the shape. You can show the vector strokes which make up your drawing and visualize the vector line drawn by the Cutter tool as you draw it.

To use the Cutter tool:

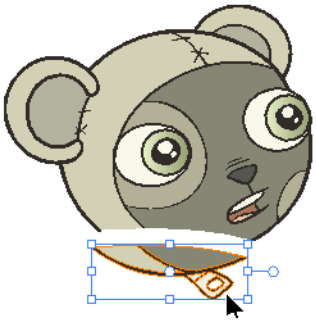
1. Do one of the following:
   - In the Drawing Tools toolbar, select the Cutter tool.
   - Select **Tools > Drawing Tools > Cutter.**
   - Press [4] to cycle through the tools.
2. Select **View > Show Strokes** or press [K] to display the vector lines composing your drawing.



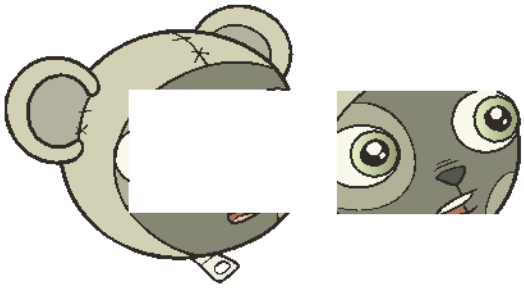
3. In the Drawing or Camera view, draw the separation line on your drawing.



4. Once you split the drawing, you can use the Select tool to select the separated part and reposition or transform it—see Selecting Drawing Objects on page 96.



Scissor Tool



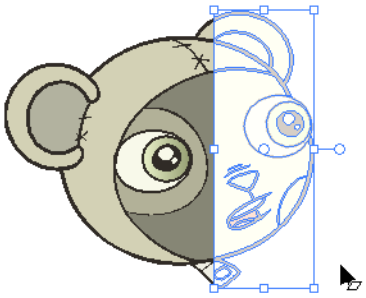
The Scissor tool lets you cut a selection inside a drawing object, and reposition or transform it right-away without switching tools.

To cut parts from a drawing using the Scissor tool:

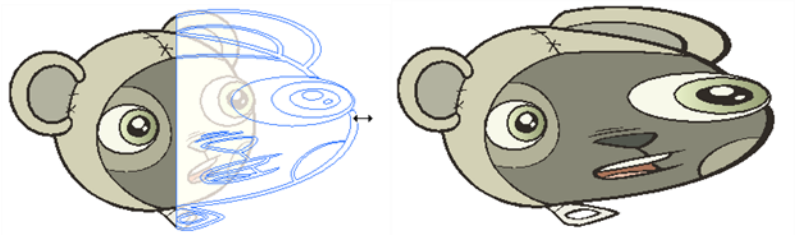
1. Do one of the following:

- In the Drawing Tools toolbar, select the Scissor tool.
- Select **Tools > Drawing Tools > Scissor.**
- Press [4] 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 hold [Alt] (Windows) or [⌘] (Mac OS X) 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.

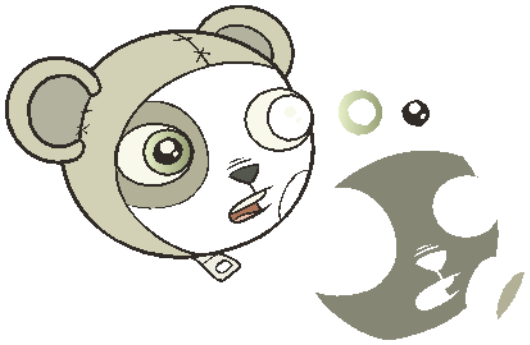


More Drawing Options

Toon Boom Studio provides many useful drawing and design options.

- Group and Ungroup below
- Smooth on the next page
- Optimize on page 119
- Flatten and Optimize on the next page
- Transform on page 120
- Arrange on page 121
- Show Current Drawing on Top on page 121

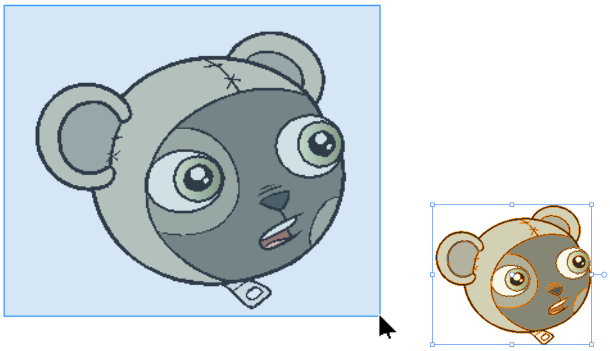
Group and Ungroup



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 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. Do one of the following:
   - In the Drawing Tools toolbar, click the Select tool.
   - Select **Tools > Drawing Tools > Select**.
   - Press the [!].
2. In the Drawing or Camera view, select the drawing objects you want to group. To select all the shapes in your drawing, press [Ctrl] + [A] (Windows) or [⌘] + [A] (Mac OS X).



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

   Your drawing objects are grouped and can be selected with a single click.

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

To ungroup drawing objects:

1. Do one of the following:
   - In the Drawing Tools toolbar, click the Select tool.
   - Select **Tools > Drawing Tools > Select.**
   - Press [!].
2. In the Drawing or Camera view, select a grouped object and select **Tools > Ungroup** or 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 a drawing object to smooth using the Select tool.
2. Select **Tools > Smooth**.

Flatten and Optimize

The Flatten and Optimize operations are similar. They are used to merge shapes and brush strokes in the 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

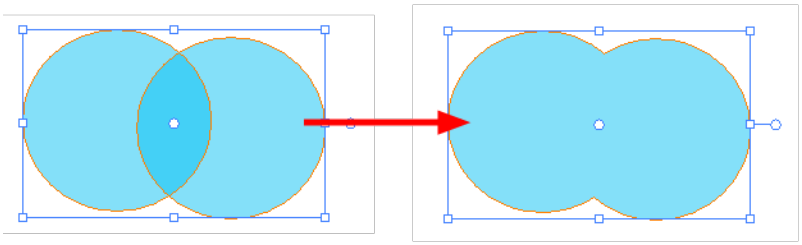
because lines are drawn one of top of each other. If you intend on repainting the shape or line or modifying it, it will be easier if they are merged together as one.

Flatten

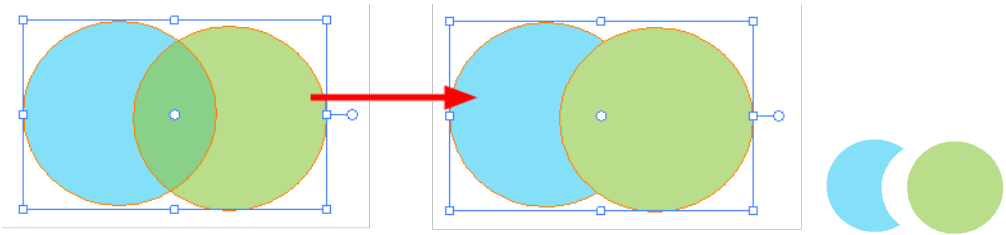
The Flatten operation merges shapes and brush strokes of a drawing into a single flat layer. This means that if you have shapes or strokes of a transparent colour, you will lose the overlapping effect.

To use the Flatten operation:

1. In the Drawing or Camera view, select the drawing objects to flatten using the Select tool. To select all shapes in your drawing, press [Ctrl] + [A] (Windows) or [⌘] + [A] (Mac OS X).
2. Select **Tools > Flatten**.
   - Shapes of the same colour are merged together. In this example, the two circles overlapping one another were painted using a transparent colour.



   - Shapes of different colours 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**.

Optimize

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

If you have transparent shapes overlapping one another, they will not be merged or flattened. The transparent overlapping effect is preserved.

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, press [Ctrl] + [A] (Windows) or [⌘] + [A] (Mac OS X).
2. Select **Tools > Optimize**.

   Overlapping shapes of the same non-transparent colour are merged together.

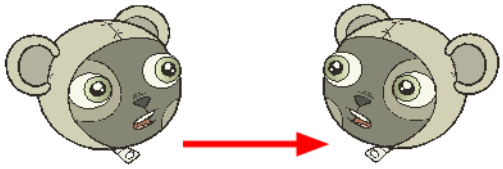
   Overlapping shapes of different non-transparent colours are merged and cropped.

Transform

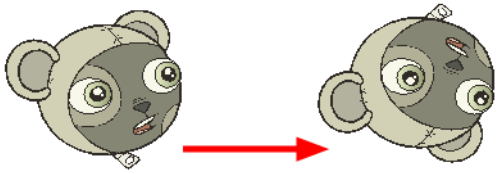
Use the different Transform operations to apply a specific transformation, such as a flip or a rotation to a drawing shape selection.

To use the Transform options:

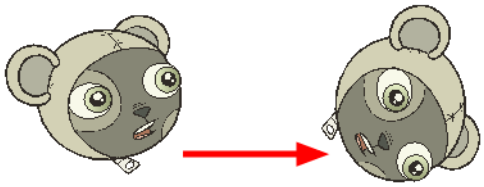
1. In the Drawing or Camera view, select the drawing object to flip using the Select tool. To select every shape in your drawing, press [Ctrl] + [A] (Windows) or [⌘] + [A] (Mac OS X).
2. Select **Tools > Transform** and one of the following:
   - **Flip Horizontal:** Flips the currently selected shape horizontally.



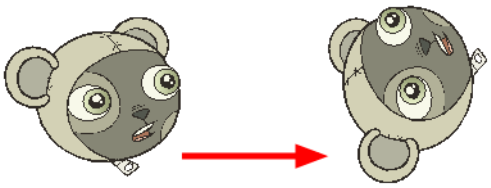
   - **Flip Vertical:** Flips the currently selected shape vertically.



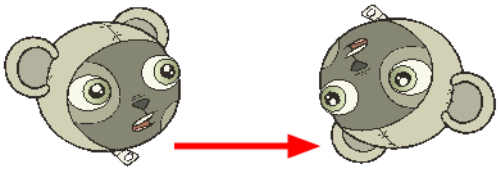
   - **Rotate 90 CW:** Rotates the currently selected shape clockwise 90°.



   - **Rotate 90 CCW:** Roates the currently selected shape counterclockwise 90°.



- **Rotate 180:** Rotates the currently selected shape 180°.



Arrange

You can reorder the shapes and strokes of a drawing.

This option will only reorder strokes within a drawing. If you want to reorder layers in the Timeline view, see Ordering Your Layers on page 268 and Ordering Parented Layers on page 269.

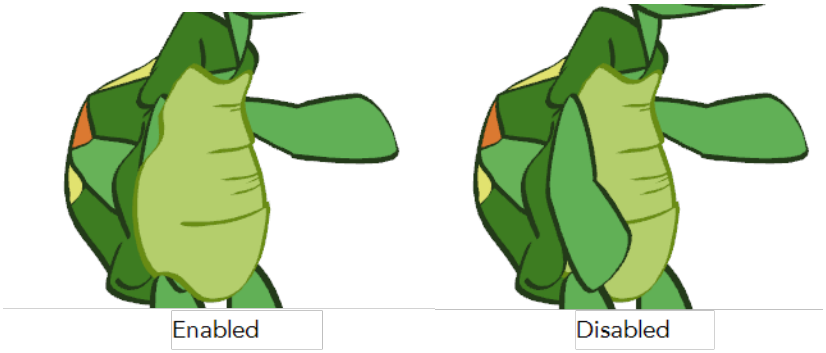
To reorder shapes in a drawing:

1. In the Drawing or Camera view, use the Select tool to select the drawing objects to reorder.
2. Select **Tools > Arrange** and one of the following:
   - **Bring to Front**: Moves the currently selected shape on top of all the others.
   - **Bring Forward**: Moves the currently selected shape one level higher.
   - **Send to Back:**; Moves the currently selected shape under all the others.
   - **Send Backward**: Moves 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, you must place the drawing in the correct order compared to all the others in the scene. In the following example, the belly of the turtle was selected.



To use the Show Current Drawing on Top option:

- Select **View > Show Current Drawing on Top**.

Preferences

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

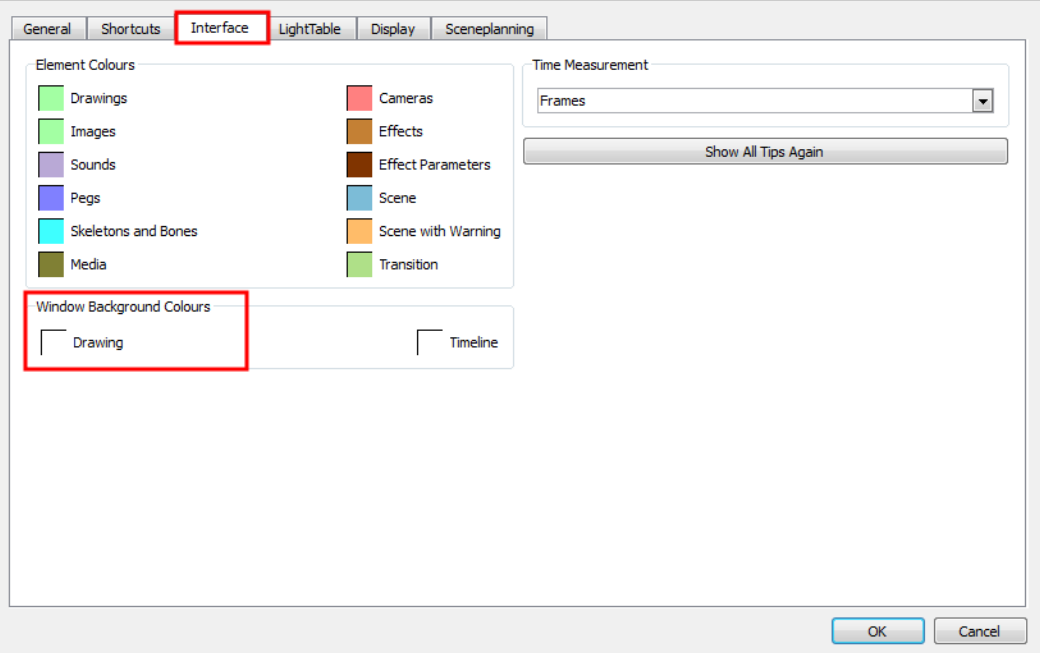
- Window Background Colours below
- Light Table on the next page

To open the Preferences panel:

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

Window Background Colours

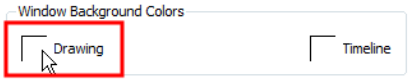
You can change the background colour of the Drawing view. You may want to do this if you are drawing with very light colours.



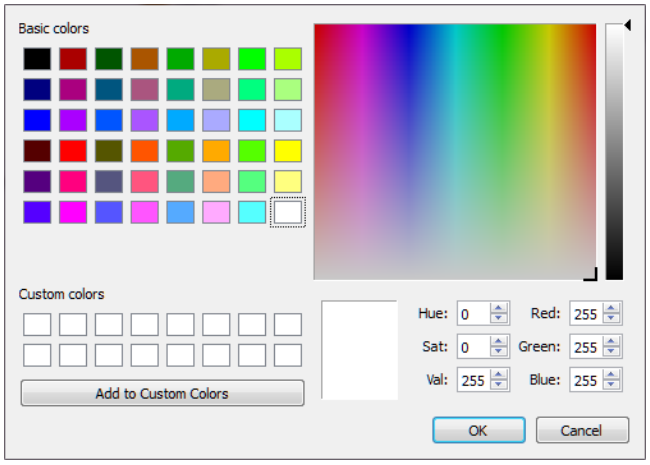
To change the colour of the Drawing view:

1. In the Preferences panel, select the **Interface** tab.

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



The Select Colour dialog box opens.

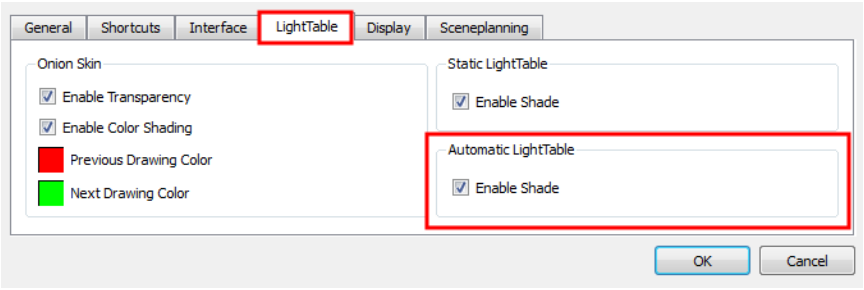


3. Choose a colour and click OK.
4. Click OK in the Preferences panel.

   The Drawing view background colour changes to the selected colour.

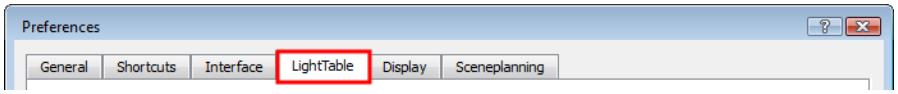
Light Table

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



To use the Automatic Light Table:

1. In the Preferences panel, select the **LightTable** tab.



2. In the Automatic LightTable section:

   - Select the **Enable Shade** option to display the other columns drawings as washed out colours when using the Automatic Light Table.
   - Deselect the **Enable Shade** option to display the other columns drawings with their real colours when you are using the Automatic Light Table.

3. Click OK.

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:

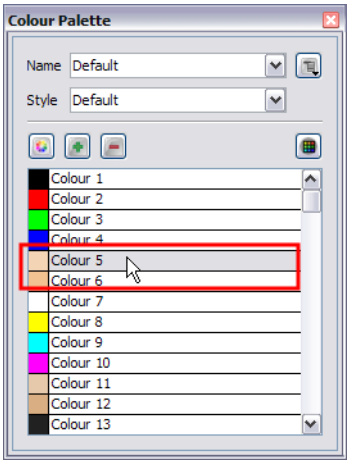
- How to Paint on the next page
- Colours on page 127
- Colour Display Modes on page 141
- Using the Painting Tools on page 142
- Closing Gaps on page 145
- Selecting a Colour in a Drawing on page 148
- Editing Gradients and Textures on page 149
- Palettes on page 152

How to Paint

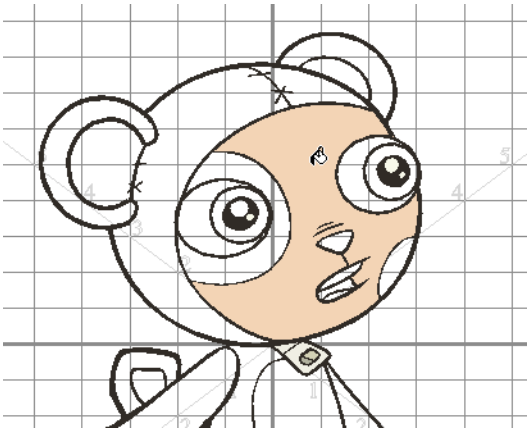
Follow these very simple instructions to learn how to paint your drawings. Once you master this operation you will be able to try all the tools and features explained below.

To paint your drawings:

1. Do one of the following:
   - In the Drawing Tools toolbar, select the Paint tool.
   - Select **Tools > Drawing Tools > Paint**.
   - Press [#].
2. In the Colour Palette view, select a colour from the palette.



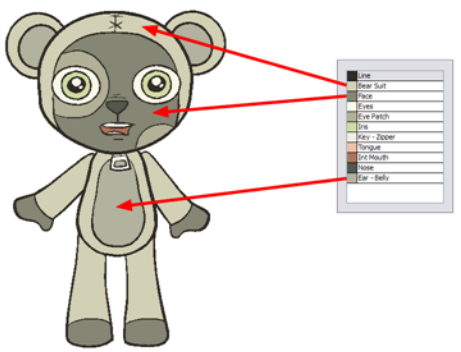
3. In the Camera or Drawing view, start painting the colours on your drawing.



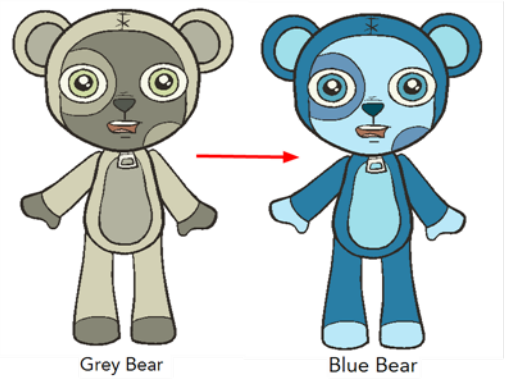
Colours

In Toon Boom Studio, you use different colour swatches to paint your drawings rather than modifying the tint of one colour each time you want 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 anytime without having to repaint it!



This topic is divided as follows:

- Adding a Colour Swatch below
- Deleting a Colour Swatch on page 140

Adding a Colour Swatch

You can create three different types of colour swatches:

- Solid Colour Swatch on the next page

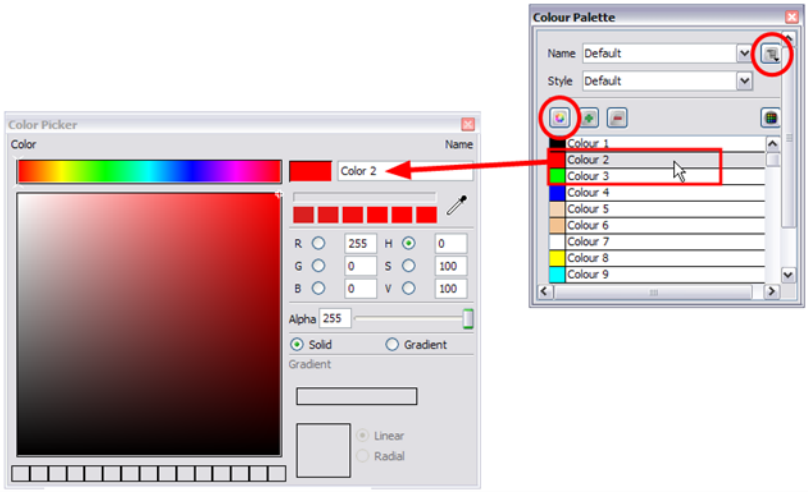
- Gradient Colour Swatch on page 134
- Bitmap Texture Swatch on page 138

Solid Colour Swatch

To add or modify a solid colour swatch using Windows:

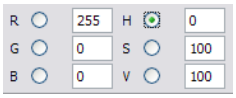
1. Do one of the following:
   - In the Colour Palette view, click the Add Colour button.
   - Click the Menu button and select **Colour > Add Colour**.
2. To edit your colour, click the Menu button and select **Colour > Edit Colour**. Or double-click the colour pot or click the Edit Colour button.

   The Colour Picker window opens.



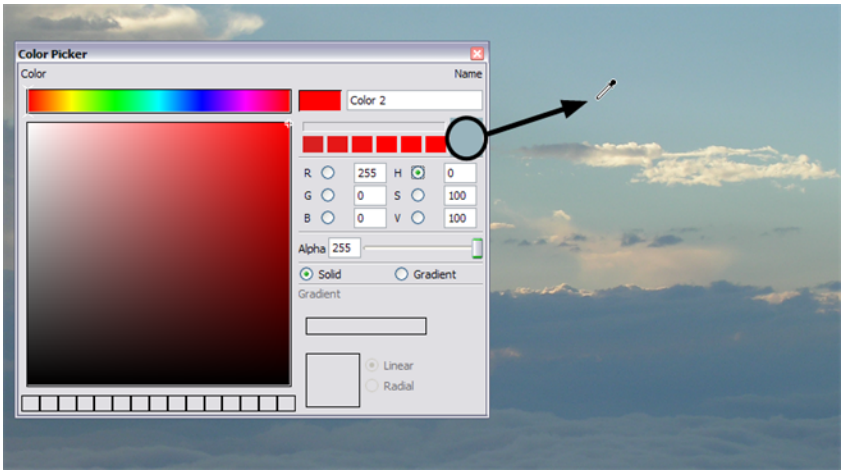
3. To set your colour:
   - Select the colour you want from the colour wheel.

   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.



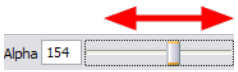
OR

- Click the **Dropper** button to select any colour on your screen. It can be from the Toon Boom Studio's interface, your operating system, or any other opened application.

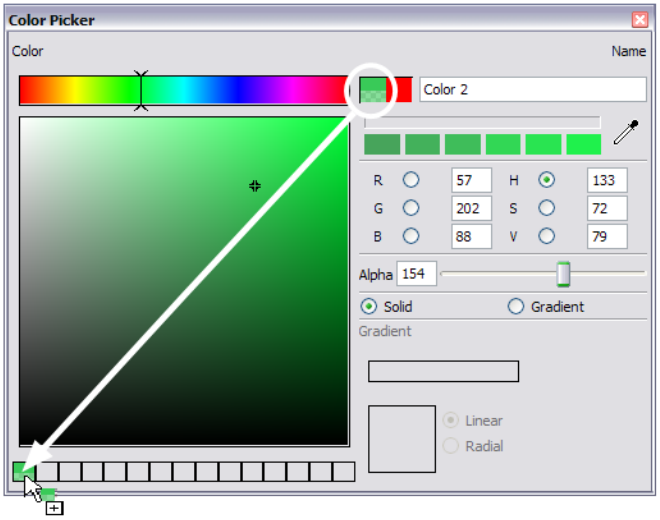


4. If needed, click the Shade Scale's swatches to modify the shade of the selected colour.

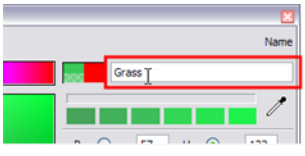
5. If necessary, adjust the level of transparency with the Alpha slider, or type the value directly in the Alpha field. 0 = 100% transparent, 255 = 100% opaque. Any value between 0 and 255 gives a more-or-less semi-transparent colour.

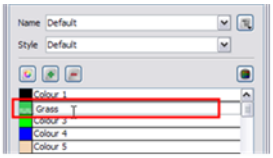


6. If necessary, select the new colour from the Colour Display area and drag it to the Colour Storage Library, so you can quickly access it later.



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

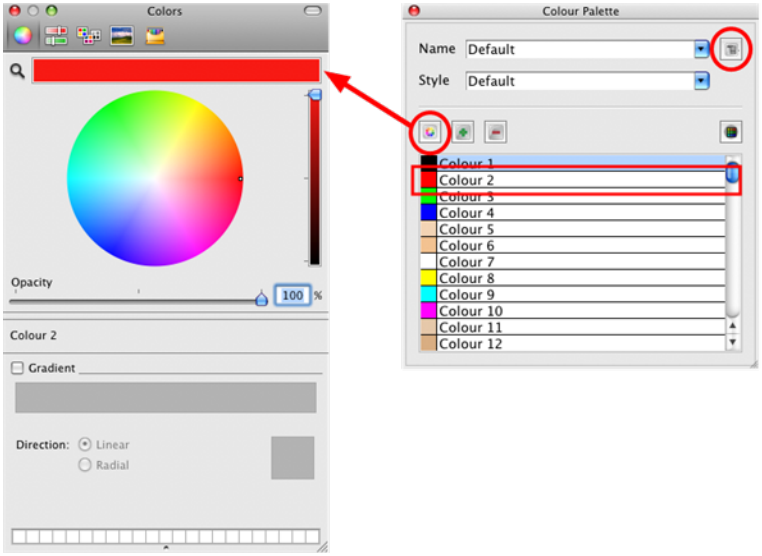




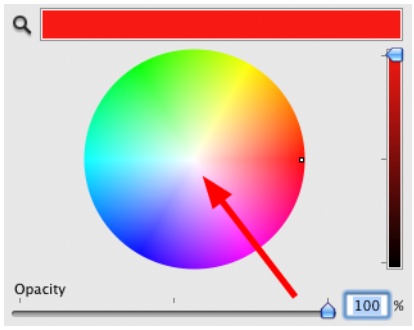
To add or modify a solid colour swatch using Mac OS X:

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

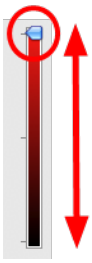
   The Colour window opens.



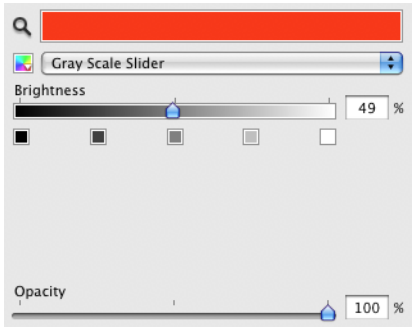
3. Use the top buttons to select one of the five colour picker display modes:
   - **Colour Wheel**
   - **Colour Slider**
   - **Colour Palettes**
   - **Image Palettes**
   - **Crayons**
4. To select a colour from the Colour Wheel display mode:



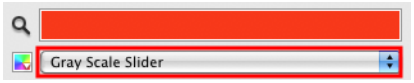
- Pick the colour you want from the colour wheel.
- If needed, use the Shade Scale's slider to modify the shade of the selected colour.



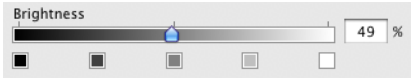
5. To select a colour from the Colour Slider display mode:



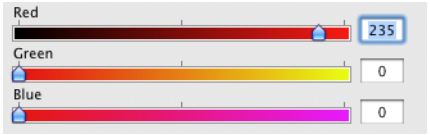
- From the slider type drop-down list, select the type of slider you want to use:



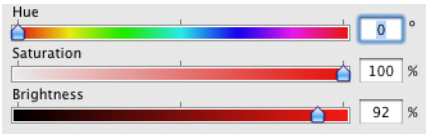
- Greyscale slider



- RGB sliders

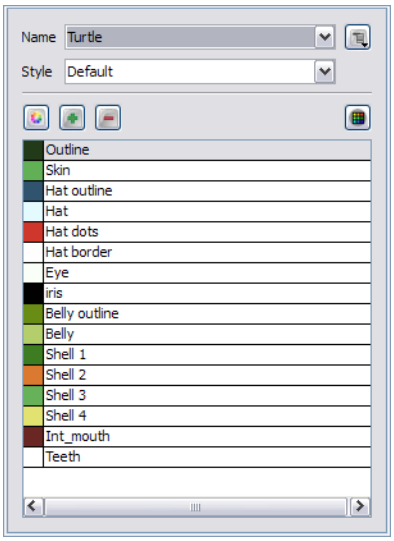


- HSB sliders



  - 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:



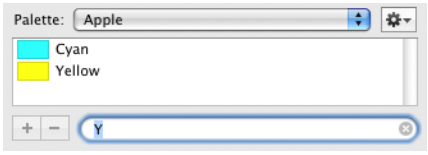
  - Use the palette drop-down list to select a system palette to display. System palettes are not linked to Toon Boom Studio.
  - From the Palette Menu button, select one of the following:

    New to create a new system palette.

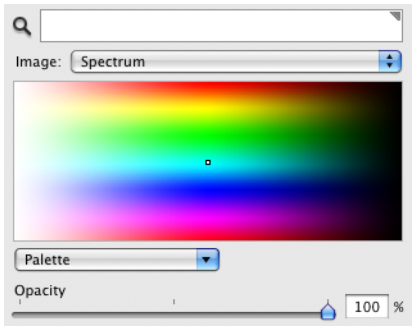
    Open to open a system palette stored on your computer.

    Rename to rename to current palette. Note that you can not rename an Apple default palette.

    Remove to delete the current palette. Note that you can not remove an Apple default palette.
  - Use the plus 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 minus 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, select the image you want to display in the main space. By default, only the Spectrum image is available. Once you start adding pictures, they will be added to the list.
- From the Palette drop-down menu, select one of the following:

  New from File to browse to a picture of your choice to be displayed in the main space.

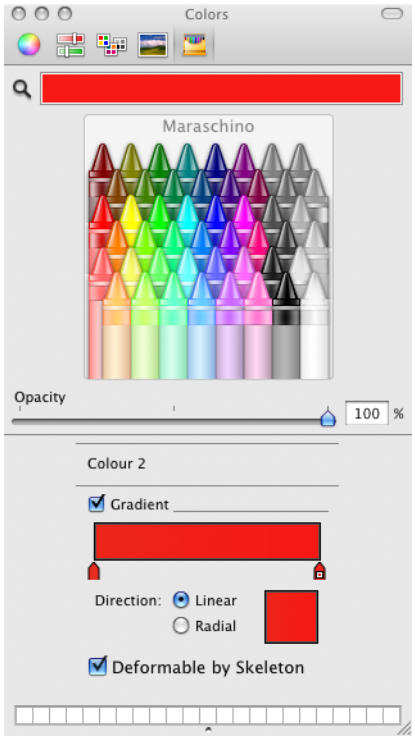
  Rename to rename the current picture. This is the name that appears in the Image drop-list. Note that you can not rename an Apple default picture.

  Remove to remove the current picture. Note that you cannot remove an Apple default picture.

  Copy to add the current image to your clipboard.

  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:

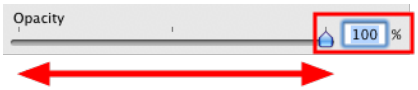


- Click a crayon from the image to select that colour.

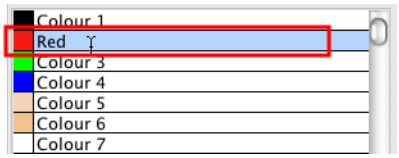
9. In all of the colour picker display modes, you can also:

- Click the Magnifier to select any colour on your screen. It can be from the Toon Boom Studio's interface, your operating system or any other opened application.

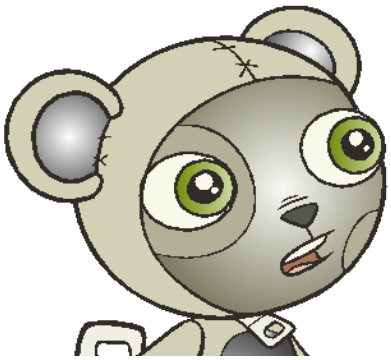
- If necessary, adjust the level of transparency with the Opacity slider, or type the value directly in the percentage field. 0 = 100% transparent, 255 = 100% opaque. Any value between 0 and 255 gives a more-or-less semi-transparent colour.



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

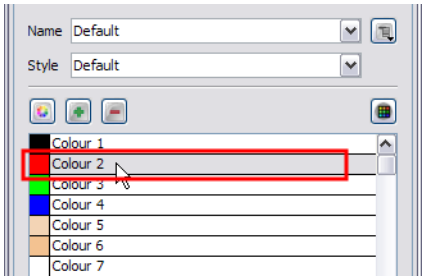


Gradient Colour Swatch



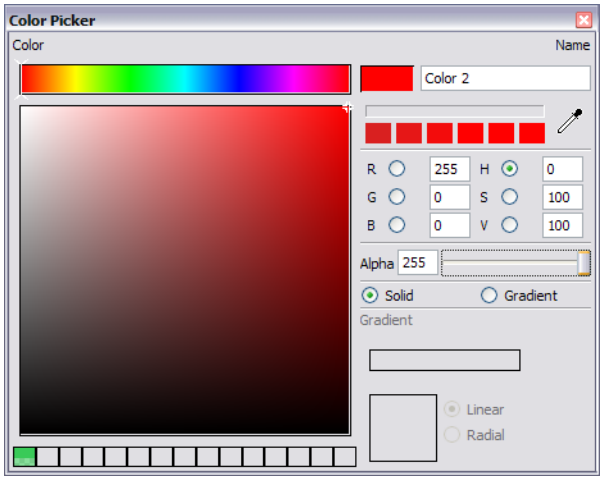
To create a gradient colour swatch using Windows:

1. In the Colour Palette view, select a colour to modify.

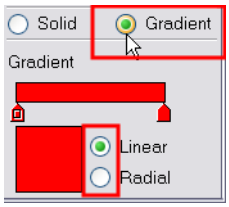


2. Click the Colour Palette Menu button and select **Colour** > **Edit Colour**. You can also double-click the colour swatch.

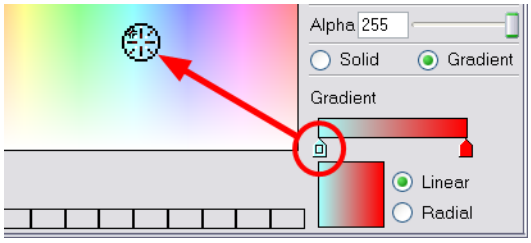
   The Colour Picker window opens.



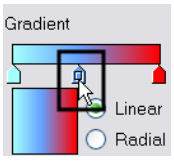
3. Select the **Gradient** option.



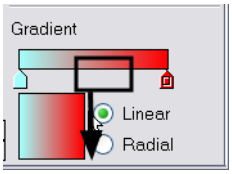
4. Select the **Linear** or **Radial** option.
5. Select the Gradient arrows to modify the colours.



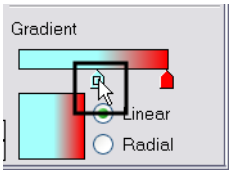
- Click between the arrows to add extra colours.



- Pull down the arrows to remove them.



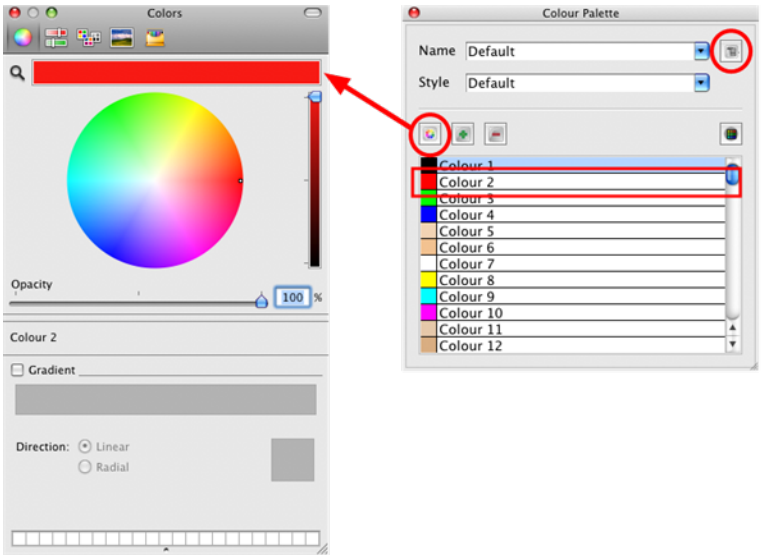
- Move the arrows left and right to modify the gradient distance.



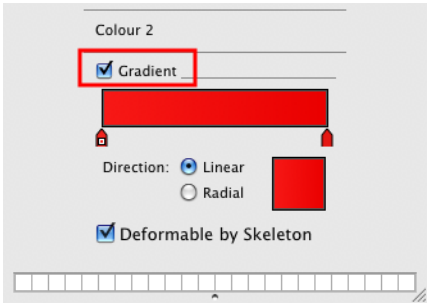
To create a gradient colour swatch using Mac OS X.

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.

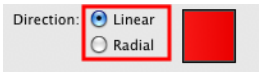
   The Colours window opens.



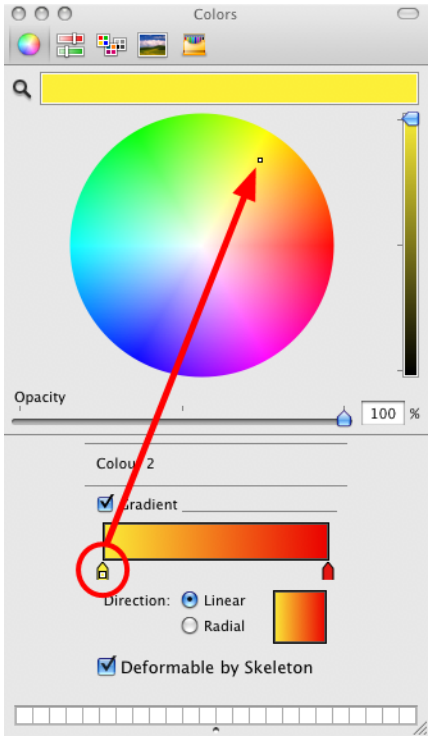
3. Select the **Gradient** option.



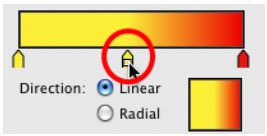
4. Select the **Linear** or **Radial** option.



5. Select the Gradient arrows to modify the colours.

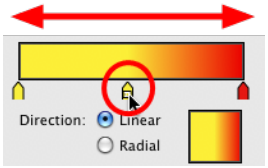


- Click between the arrows to add extra colours.

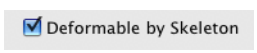


- Pull up the arrows to remove them.

- 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—see Bones on page 343 to learn more about Skeletons and Bones.



Bitmap Texture Swatch

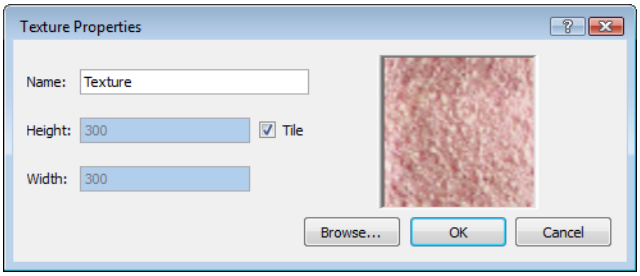
To create and edit a texture colour:

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

3. Click **Open** to create the colour swatch.

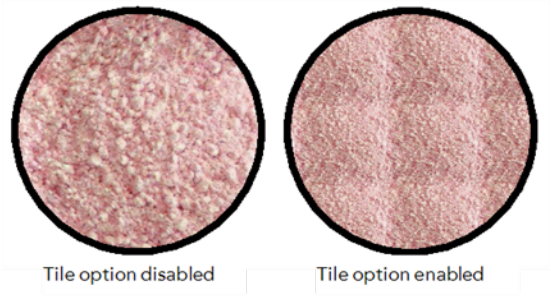
4. In the Colour Palette view, select the texture swatch that you want to modify the texture of.
5. Double-click on the colour swatch to edit.

   The Texture Properties dialog box opens.



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

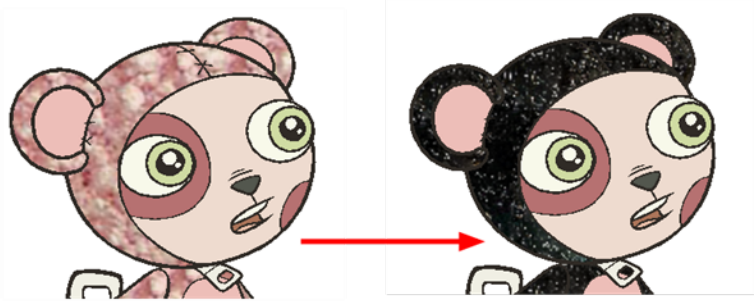
7. Disable the Tile option if you want the texture to automatically scale up to the size of the painted zone. Enable the Tile option if you want your image to repeat over and over inside the drawing zone.



8. Click OK.

Refer to the Editing Gradients and Textures on page 149 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 is kept.

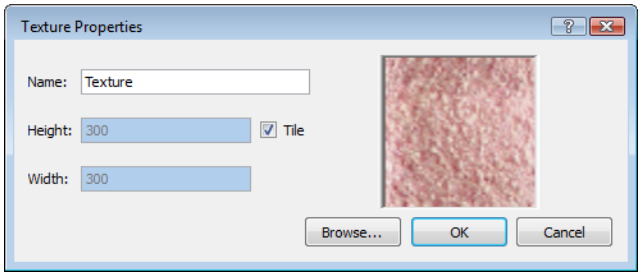


To replace a texture swatch:

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

2. Double-click the colour swatch to edit.

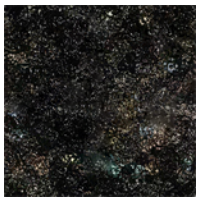
   The Texture Properties dialog box opens.



3. Click the Browse button.

   The Browse window opens.

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



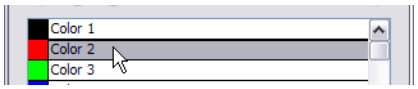
5. Click **Open** to update the colour swatch.
6. Click OK.

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 the Delete Colour button. You can also click 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.

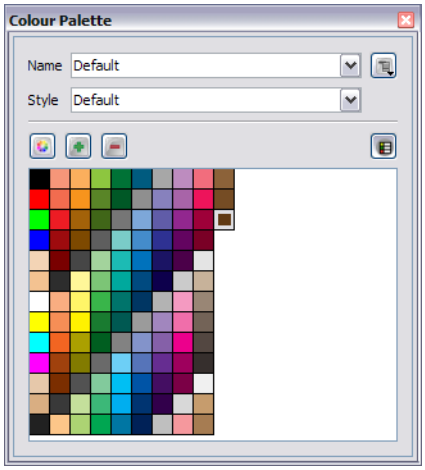
Colour Display Modes

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

- List mode
- Swatch mode

To toggle between the display modes:

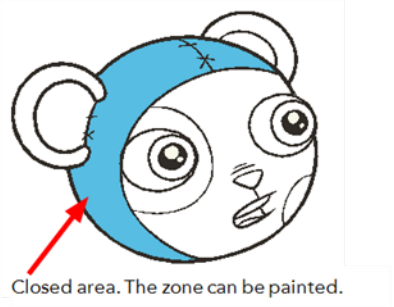
- In the Colour Palette view, click the Show/Hide Colour Names button to switch between the two modes. You can also click the Menu button and select **Show/Hide Colour Names**.



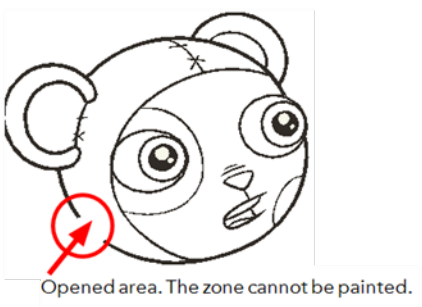
Using the Painting Tools

The Paint tool is the main tool for painting your drawings. 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 must close them using either the Brush, Pencil, Close Gap tools or the Automatic Close Gap option.



Closed area. The zone can be painted.



Opened area. The zone cannot be painted.

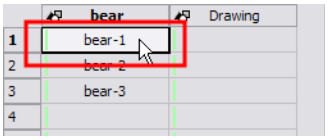
This topic is divided as follows:

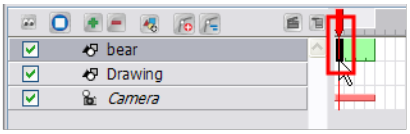
- Painting with the Paint Tool below
- Painting with the Paint Unpainted Tool on the facing page
- Unpainting Areas with the Unpaint Tool on page 144

Painting with the Paint Tool

To paint with the Paint tool:

1. In the Timeline or Exposure Sheet view, select a drawing to paint.

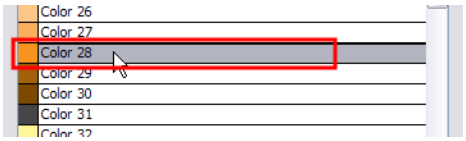




2. Do one of the following:
   - In the Drawing Tools toolbar, select the Paint tool.
   - Select **Tools > Drawing Tools > Paint**.
   - Press [#].

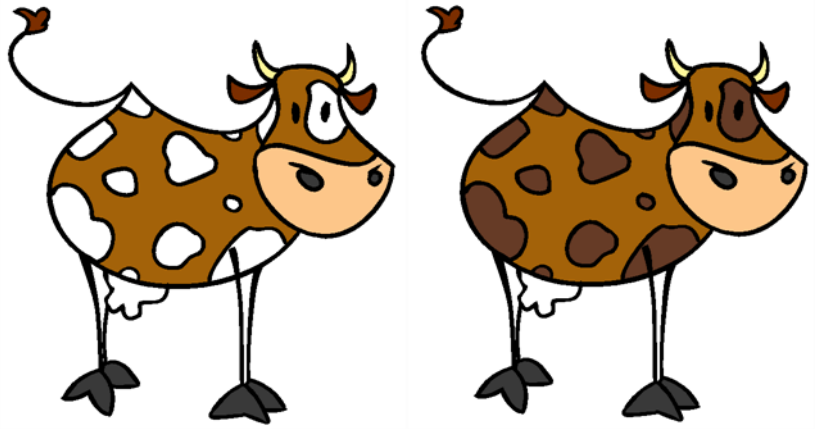
   .

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.

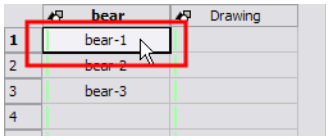
Painting with the Paint Unpainted Tool

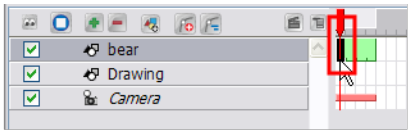


The Paint Unpainted tool only paints empty zones. Any line or filled zone remains unchanged. For example, if you are painting a cow or a leopard, this tool is very useful when it is time to paint all the spots on the body. Instead of trying to click in each one of them, you can draw a large selection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

To paint with the Paint Unpainted tool:

1. In the Timeline or Exposure Sheet view, select a drawing to paint.

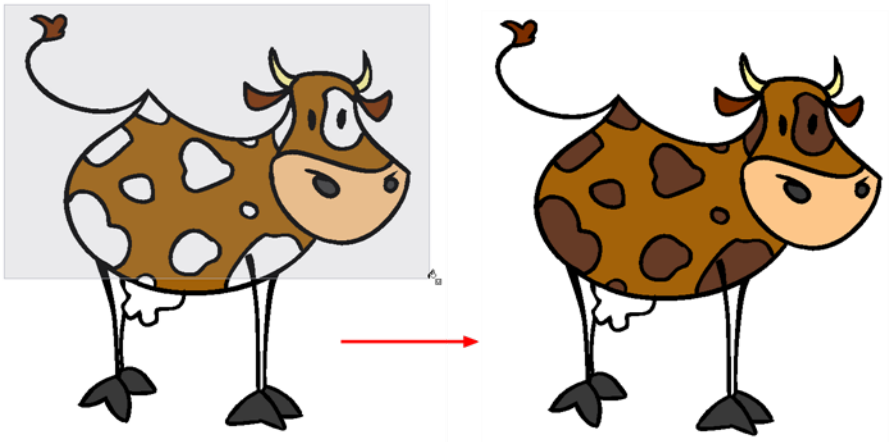




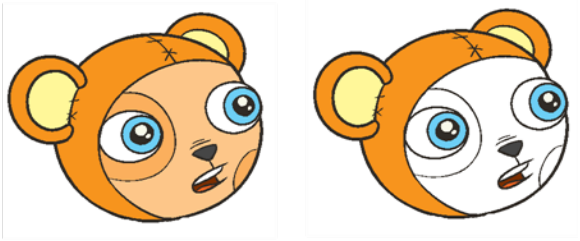
2. In the Drawing Tools toolbar, select the **Paint Unpainted** tool, under the Paint tool category. Or

   Tools > Drawing Tools > Paint Unpainted.

3. In the Drawing or Camera view, draw a wide selection containing all the zones to paint.



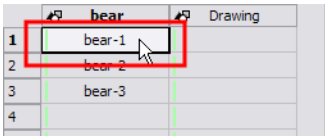
Unpainting Areas with the Unpaint Tool

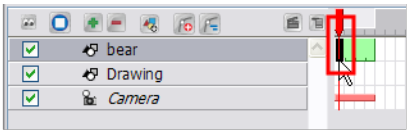


The Unpaint tool unpaints everything it touches. You can use it to unpaint zones you have painted by mistake, or to simply unpaint a drawing.

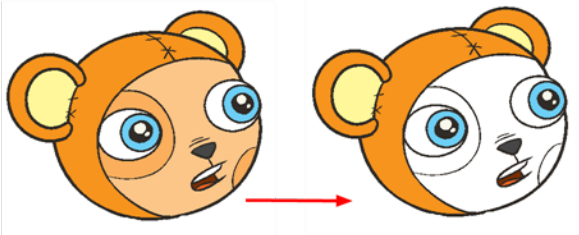
To unpaint a drawing with the Unpaint tool:

1. In the Timeline or Exposure Sheet view, select a drawing to unpaint.

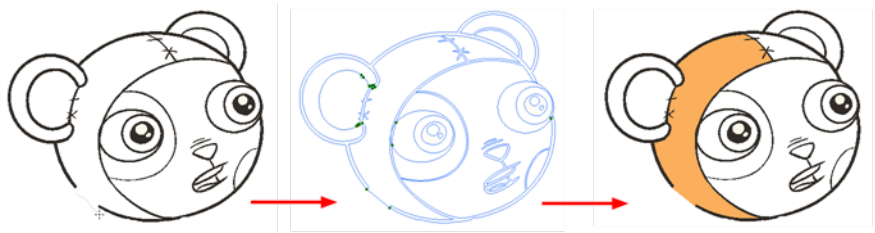




2. In the Drawing Tools toolbar, select the Unpaint tool, under the Paint tool category. You can also select the Unpaint tool from the top menu **Tools > Drawing Tools > Unpaint**.
3. In the Drawing or Camera view, click on the zones to unpaint.

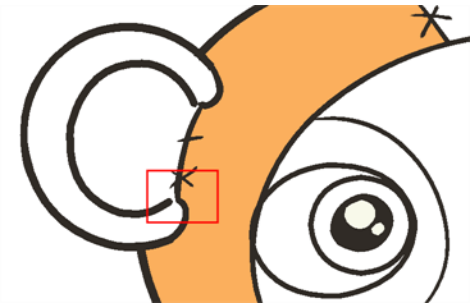


Closing Gaps



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

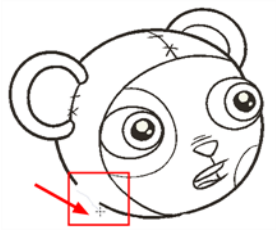
The Close Gap tool is used to close small gaps in a drawing. The Paint tool only paints closed areas. The Close Gap tool creates a small, invisible stroke between the two closest points to close the colour zone. You do not need to trace directly over the gap. You can draw it a few millimetres away and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

To use the Close Gap tool:

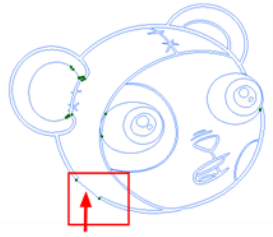
1. In the Drawing Tools toolbar, select the Close Gap tool under the Paint tool category.
2. Select **Tools > Drawing Tools > Close Gap**.

You can display invisible lines by selecting **View > Show Strokes** or pressing [K].

3. In the Camera or Drawing view, draw an invisible line near to the gap to be closed. The gap closes automatically.



The new invisible line closing the gap appears.



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

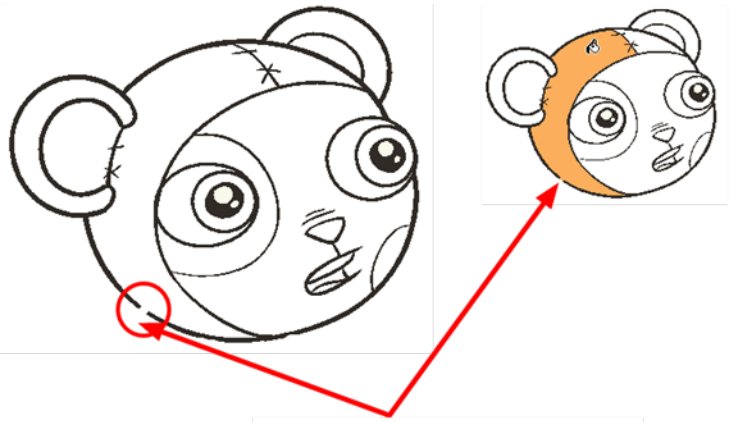
Closing Holes Using Automatic Close Gap

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, Toon Boom Studio analyzes 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, is painted.
- **Close Small Gap:** Only the zones with very small gaps in the lines are painted. Larger gaps are not painted.
- **Close Medium Gap:** Zones with small and medium gaps are painted. The zones with larger gaps are not painted.
- **Close Large Gap:** Zones with small, medium and large gaps are painted. Although, zones with very wide gaps are not 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, Toon Boom Studio won't either. If the gap is too big in the Camera or Drawing view, Toon Boom Studio does not close it and the zone is not painted.



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

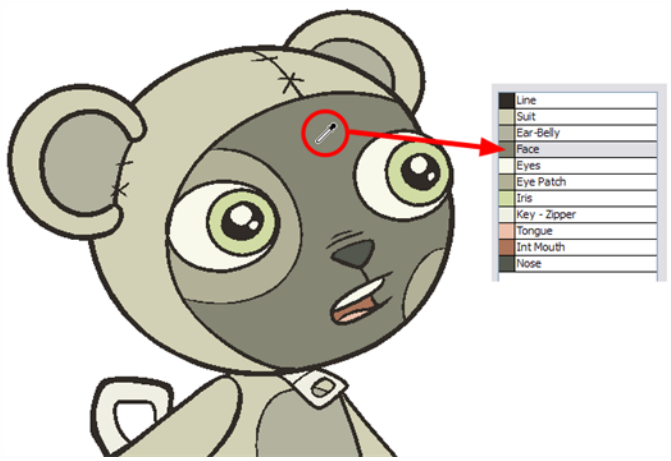
Selecting a Colour in a Drawing

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 this, you use the Dropper tool.

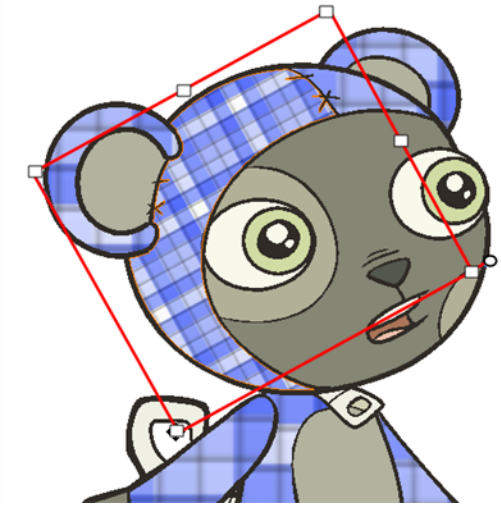
Once you select your colour on your drawing using the Dropper tool, the colour swatch is automatically selected in the Colour Palette view.

To use the Dropper tool:

1. In the Drawing Tools toolbar, select the **Dropper** tool, under the Paint tool category or select **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



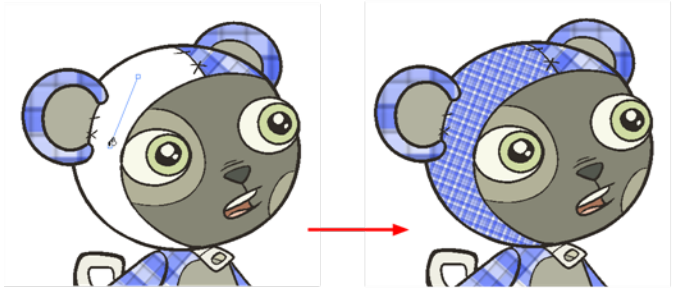
There are two ways to position your gradient and textures when you paint a drawing. You can do it when you paint with the Paint tool or afterwards using the Edit Texture tool.

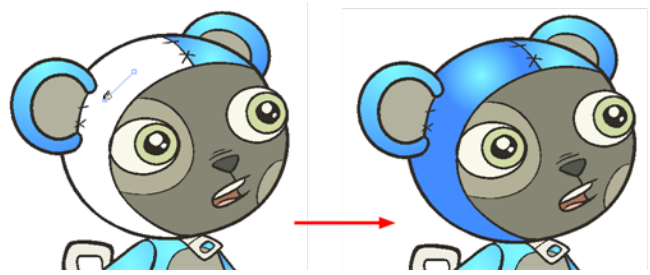
Setting a Gradient or Texture with the Paint Tool

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. Do one of the following:
   - In the Drawing Tools toolbar, select the **Paint** tool.
   - Select **Tools > Drawing Tools > Paint**.
   - Press [#].
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 determines the size and centre of your texture or gradient.





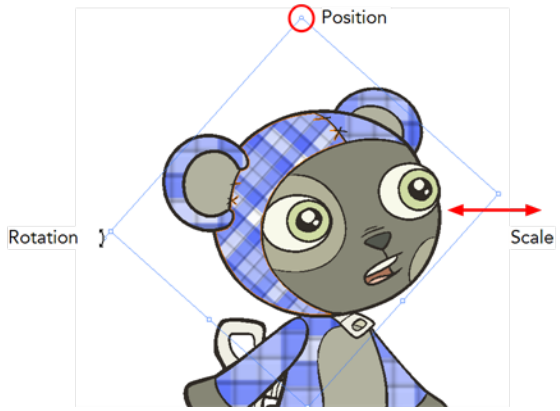
Setting a Gradient or Texture with the Edit Texture Tool

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:

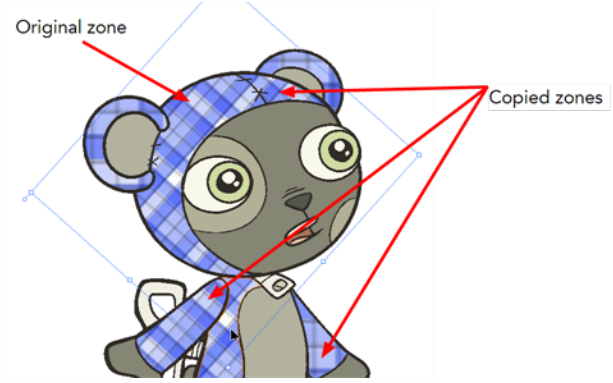
1. In the Drawing Tools toolbar, select the **Edit Texture** tool under the Paint category or select **Tools > Drawing Tools > Edit Texture**.
2. Click the Gradient or Texture zone to be modified.

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** or press[Ctrl] + [C] (Windows) or [⌘] + [C] (Mac OS X).

- Select the zone to be modified in the other drawing and select **Edit > Paste** or press [Ctrl] + [V] (Windows) or [⌘] + [V] (Mac OS X).



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 reuse each time you have a new drawing to paint. If you create a teddy bear character, you create a teddy bear colour palette that you use each time that character appears in your project.

You do 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 can 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 the facing page
- Renaming a Colour Palette on the facing page
- Deleting a Colour Palette on page 154
- Duplicating a Colour Palette on page 155
- Creating a Palette Style on page 156
- Assigning a Style on page 157
- Deleting a Style on page 157
- Mixing the Colours on page 157
- Exporting a Colour Palette on page 159
- Importing a Colour Palette on page 159

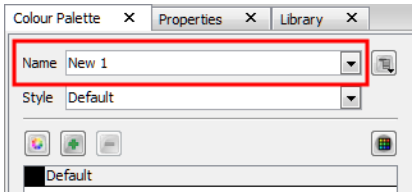
Creating a Colour Palette

The first step in the palette process is to create a new palette rather than using the default palette to paint all of your drawings.

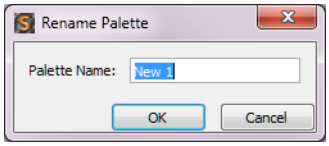
To create a new palette:

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

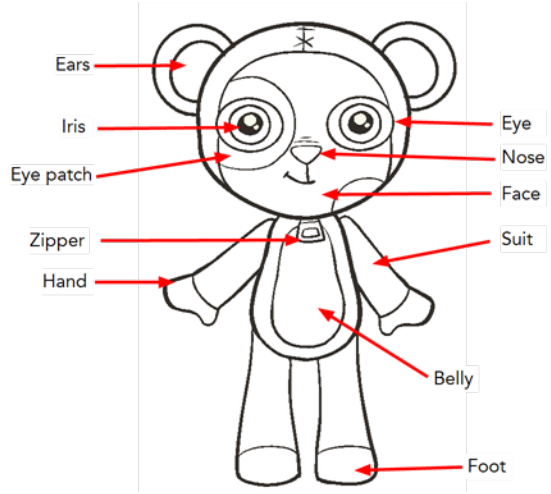
   The new palette appears in the Colour Palette view.

   The Rename Palette dialog box opens.

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

4. Add the colour swatches needed—see Adding a Colour Swatch on page 127.

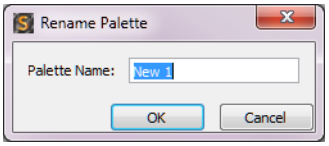
Renaming a Colour Palette

To keep your palette organized, you can rename them to better represent who and what they are used for.

To rename a palette:

1. In the Colour Palette view, select the palette to rename.
2. Click the Menu button and select **Palette > Rename Palette**.

The Rename Palette dialog box opens.



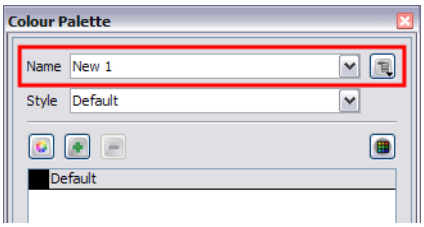
3. In the Palette Name field, type the new palette's name and click OK.

Deleting a Colour Palette

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

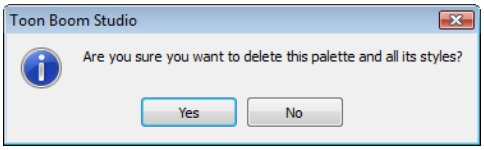
To delete a palette:

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



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

A Warning dialog box opens to confirm the operation.



3. Click OK.
   - If the palette was in use in your scene, the zones painted with its colours turns red.

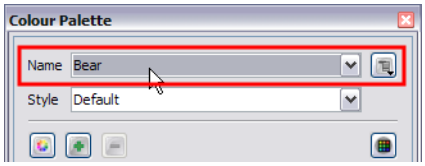
Duplicating a Colour Palette

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.

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.

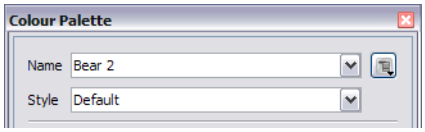
To duplicate a palette:

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



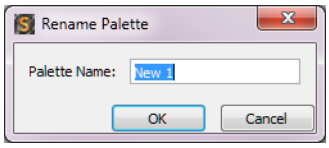
2. In the Colour Palette view, click the Menu button and select **Palette > Duplicate Palette**.

   The new palette appears in the Colour Palette view.



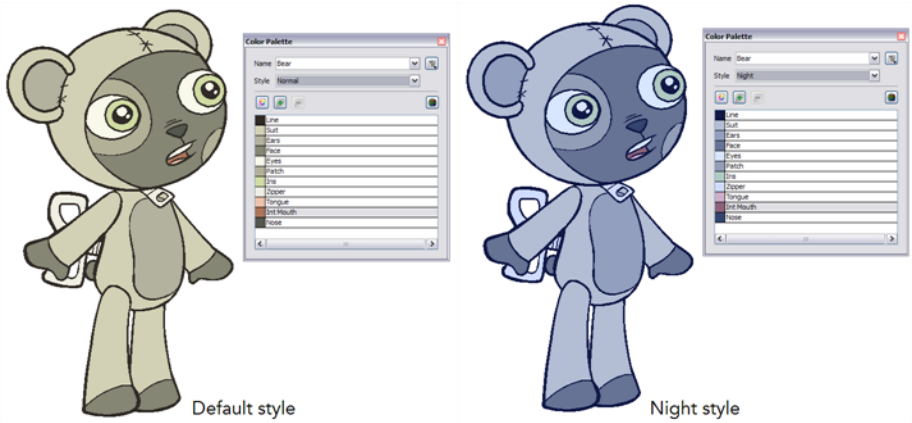
3. In the Colour Palette view, click the Menu button and select **Palette > Rename Palette**.

   The Rename Palette dialog box opens.



4. In the Palette Name field, type the new palette's name and click OK.

Creating a Palette Style

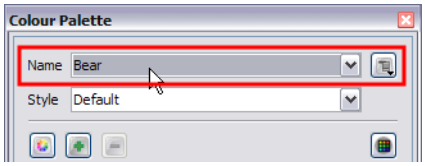


A character usually has one colour palette, although there are times when the characters are placed in different lighting conditions and require a different colour shading. The night palette is a popular choice when a scene or sequence changes from day to night. It can be difficult and time-consuming 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 updates. 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.



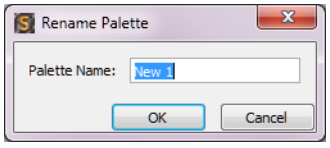
2. In the Colour Palette view, click the Menu button and select **Style > Duplicate Style**.

   The new style appears in the Style list.

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

   The Rename Style dialog box opens.

   The Rename Palette dialog box opens.



4. In the Palette Name field, type the new palette's name and click OK.

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 below topic to learn how to modify your palette style's colours.

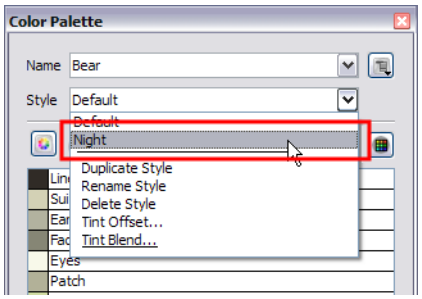
Assigning a Style

Once you paint a character with a palette, you may want to assign a different style to it. Note that the style is 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 on page 50 topic in the Starting Your Project on page 31 chapter to learn how to create scenes.

To select a palette style:

1. In the Colour Palette view, open the Style list and select the palette style to use for the current scene.

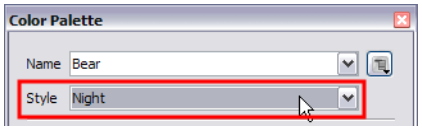


Deleting a Style

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 the Menu button and select **Style > Delete Style**.

   The zones painted with the current styles are now painted with the default style.

Mixing the Colours

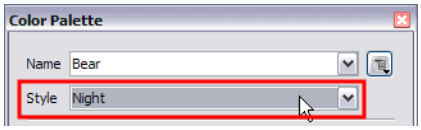
If you want to modify a series of colours at once to blend a tint in them or offset their colour, you use the Tint Blend or the Tint Offset panels. These panels are quite useful when creating palette styles such as "night" and

"day" styles.

The Tint Offset panel takes all the current colours in your palette and changes their tints. The Tint Blend panel takes a selected colour and applies it over your current colours.

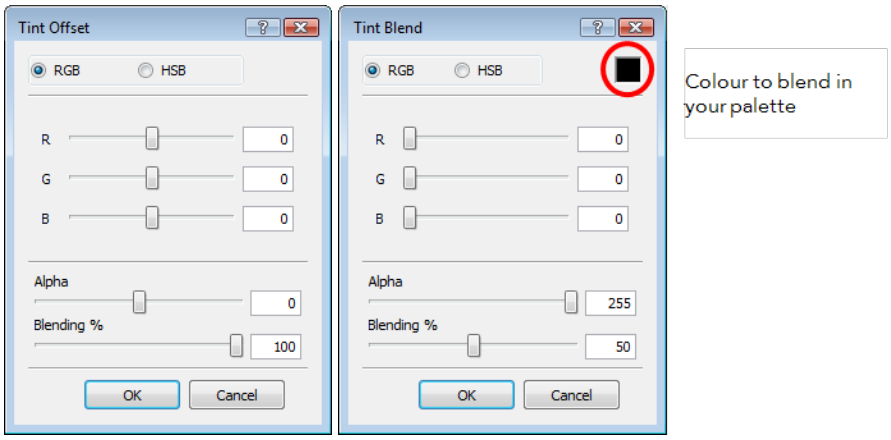
To mix colours:

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



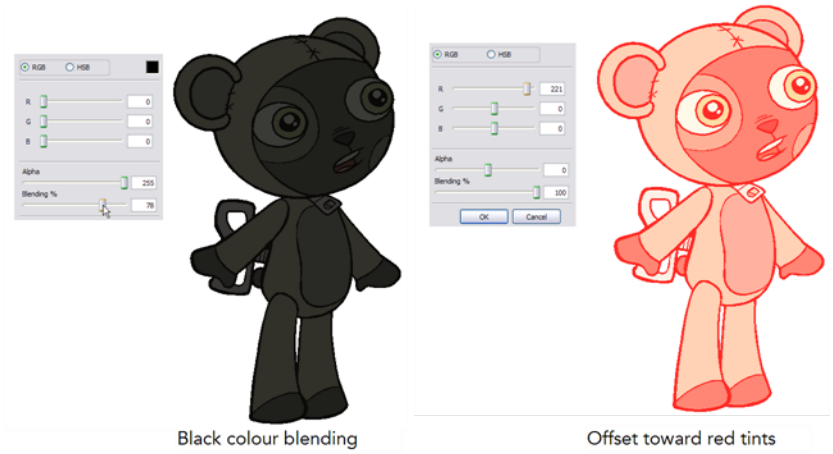
2. In the Colour Palette view, click the Menu button and select **Style > Tint Offset** or **Tint Blend**.

   The Tint Offset or the Tint Blend panel opens.



3. To modify your colours:
   - In the Tint Offset panel, move the R (red) 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 G (green) and B (blue) sliders.
   - In the Tint Blend panel, move the R (red) 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 G (green) and B (blue) 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 moving the H(hue), S (saturation) and B (brightness) sliders left or right. 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, move 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 progressively turns all your colours into that same colour. If you offset your colours, all the colours progressively changes to another tint, but they do not necessarily end up all the same colour.



Black colour blending

Offset toward red tints

4. Click OK.

Exporting a Colour Palette

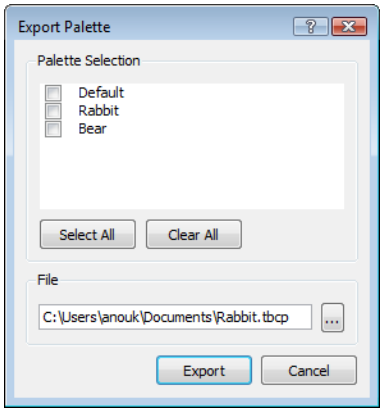
When you work on a project, you should create a backup for your palettes. Since you can modify all the colours throughout the whole project, export your palettes once they are final and keep them in an external folder.

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 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 the Browse button and select a location to save your backup palettes.
4. Click **Export**.

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 **Open**.

   The palette appears in the Palette list.

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 Bitmap Images on the next page
- Import Images with Keying on page 168
- Importing Multilayered PSD Files on page 172
- Importing AI and PDF files on page 174
- Importing from Adobe Flash on page 176
- Importing a Movie on page 177
- Scanning Images on page 180
- Capture on page 179
- Library on page 182

Importing Bitmap 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, and FlashPix.

In this section, you will cover the following topics:

- Importing Bitmaps Without Vectorizing below
- Vectorization of an Image Element or Image Cell on page 164
- Importing and Vectorizing Images on page 165

Importing Bitmaps Without Vectorizing

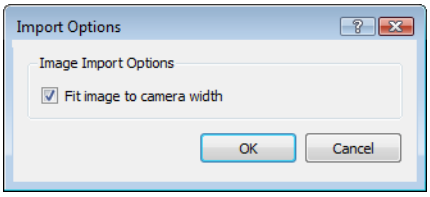
To import bitmaps:

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

   The Open browser opens.

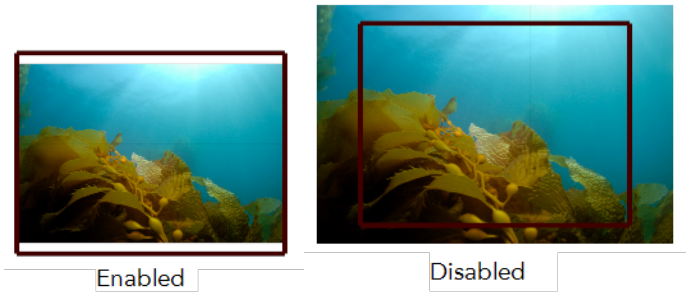
2. Browse for your bitmap image file and click **Open**.

   The Import Options dialog box opens.



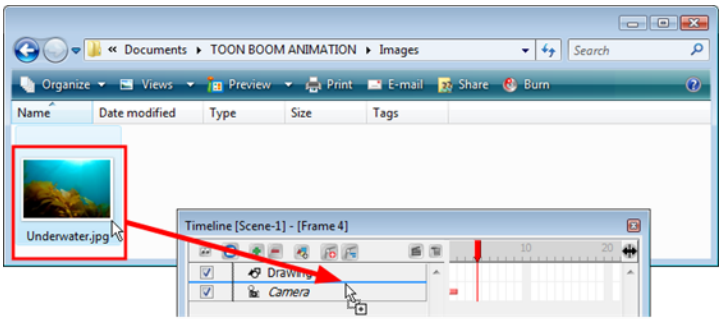
3. In the Import Options dialog box, set the Image Import Option:

   - **Fit Image to Camera Width**
     By default this option is enabled, meaning that your image is resized to fit the width of the camera frame. You can disable this option to import the image at its original size.



4. Click OK.

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.



Adding Images to a Bitmap Layer

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

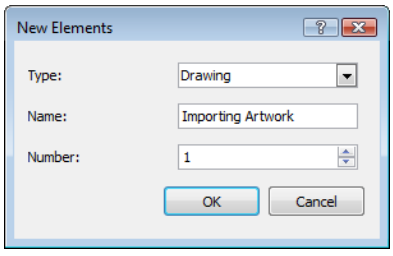
To add an image element from the top menu:

1. Select **Element > Add > Image**.
   The new image column is added to your scene.

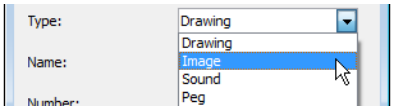
To add an image layer from the Timeline view:

1. In the Timeline View toolbar, click the Add Layer button.

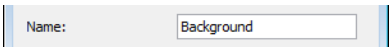
   The New Elements dialog box opens.



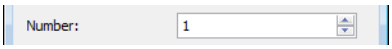
2. Choose **Image** from the Type list.



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



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

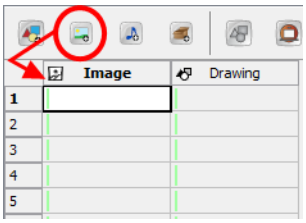


5. Click OK.

To add an image element from the Exposure Sheet view:

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

   The new image element is 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 in the selected cell and select:
   - Timeline View: **Import Images > Import Images**.
   - 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 OK.

   The image is 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 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 want 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 on a selected cell and select **Convert Element to Vector**.

   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 press [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 cels into.

   OR
   - Select the entire Drawing element in which you want to paste your Image element into.
4. Select **Edit > Paste** or press [Ctrl] + [V] (Windows) or [⌘] + [V] (Mac OS X).

   Your cells are copied and simultaneously converted into vectors.

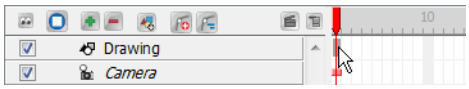
Importing and Vectorizing Images

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 the Add Drawing Element button if you do not already have an empty drawing element in your scene.

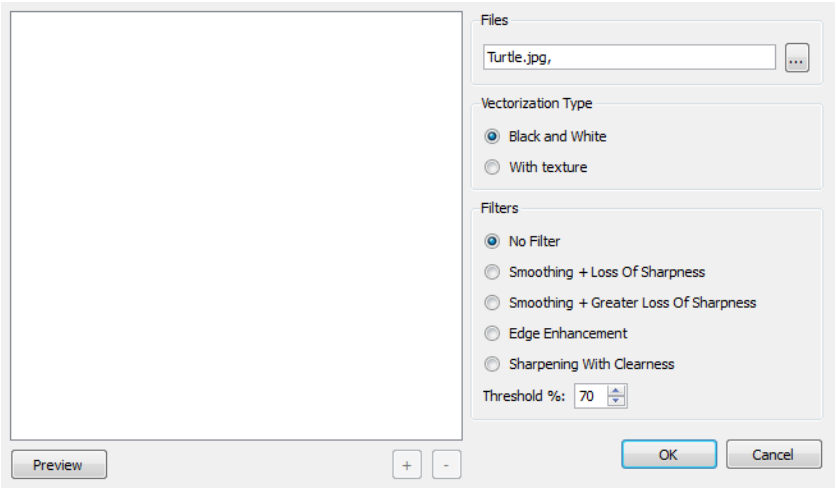
   The new drawing element is added to your scene.
2. In the Timeline or Exposure Sheet view, select an empty cell.



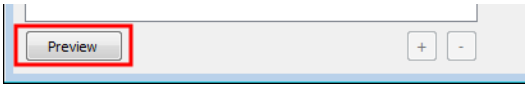
3. Right-click in the empty cell and select **Import and Vectorize > From File** or select **File > Import and Vectorize > From File**.

   The Open browser opens.
4. Locate the bitmap image file(s) you want to import and vectorize, and click **Open**. You can select multiple files if necessary.

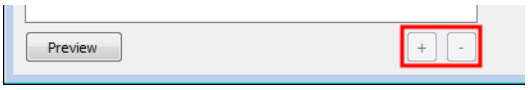
   The Import and Vectorize Options dialog box opens.



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

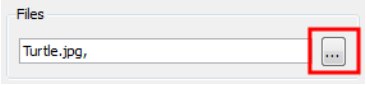


6. Click the plus (**+**) and minus (**–**) buttons to zoom in and out in the preview space.

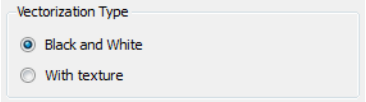


7. Set up the desired parameters:

   - **Files**: This field displays the image you selected to browse. You can click on the browse button to change your selection.

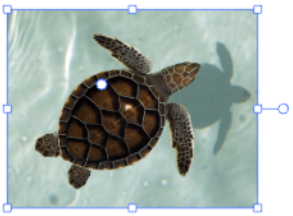


   - **Vectorization Types:**



     Black and White: Vectorizes 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: Vectorizes without applying a filter.

Smoothing + Loss Of Sharpness: Smooths the image. This process causes a loss of sharpness of the original image.

Smoothing + Greater Loss Of Sharpness: Smooths the image. This process causes a greater loss of sharpness of the original image than the option above.

Edge Enhancement: Enhances the edge of the image, resulting in a more precise result.

Sharpening With Clearness: Sharpens the images, resulting in a more precise and clear result.

Threshold%: Lets you adjust the threshold value. The greater the percentage, the more grey pixels are 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.

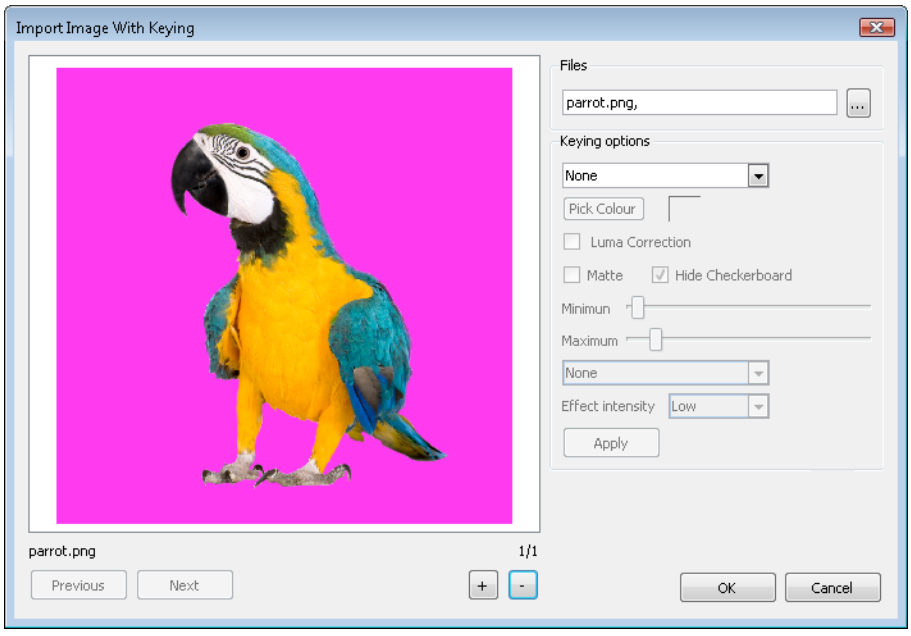
In Toon Boom Studio, you can import your images with the keying option, which isolates an element in an image with a single-coloured background.

To import images with keying:

1. In the Timeline view, select an empty cell in a bitmap image layer.
2. Right-click and select **Import Images > Import Images with Keying**.

   The Open Browser opens.
3. 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.

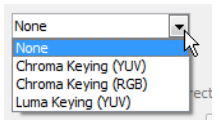


   - In the Files section, click the **Browse** button if you want to change the selected images.

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

- Use the plus (+) and minus (-) 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 list, select a keying type.

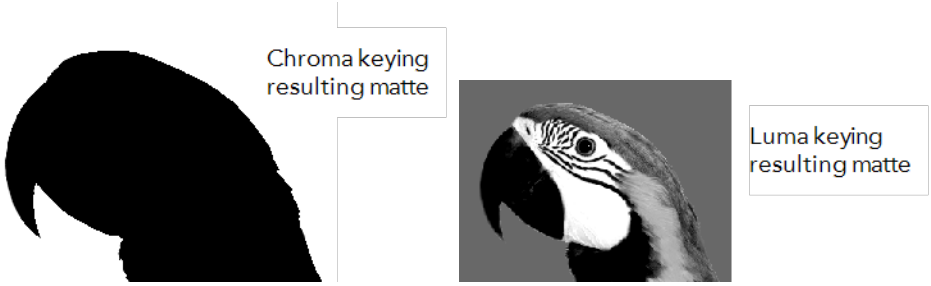


None: Selecting the None option means that there is no keying on this drawing. Selecting None makes the other parameters greyed out.

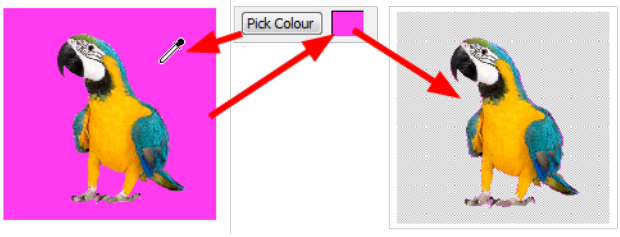
Chroma Keying (YUV): This option makes the pixels corresponding to the selected colour transparent, using the YUV channels.

Chroma Keying (RGB): This option makes 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 is determined by the different levels of colours, where the white colour is completely transparent and the black colour completely opaque.

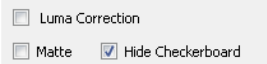


- **Pick Colour**: When you select one of the two Chroma Keying types from the drop-down menu, this option becomes available.
- Click **Pick Colour** to change your cursor to a dropper and select the background colour of your picture you want to illuminate from the preview area. As soon as you click on a colour, this colour is displayed in the colour swatch and is removed from the preview area. A grey checkerboard is displayed to represent the transparent area.



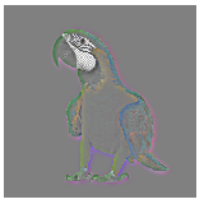
Click the colour swatch to open the Select Colour dialog box and select a precise colour from there.

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

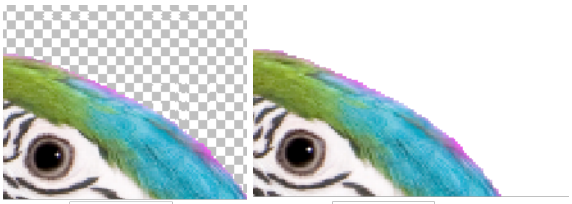


Matte: Displays the matte in the preview area.

Luma Correction: Applies a luma correction filter on your image.

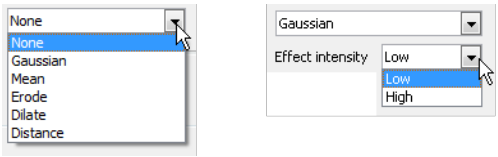


Hide Checkerboard : By default Toon Boom Studio displays a checkerboard pattern in the preview area to represent the transparent zones. You can enable the Hide Checkerboard option to conceal the checkerboard pattern and display the zone as white.



- **Minimum, Maximum**: Lets you adjust the minimum and maximum level values to be considered in the keying process following the parameters you set above. You can see the result in the preview area.

- **Filter list**: Lets you select an effect to apply on your keying selection to make it more precise. You can also use the Effect Intensity list to choose the level of intensity.



None: No filter is applied to your keying selection.

Gaussian: A gaussian blur effect is applied to your selection to soften the edge of the keyed selection.

Mean: A mean filter is 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 is cropped following the effect intensity level chosen below.

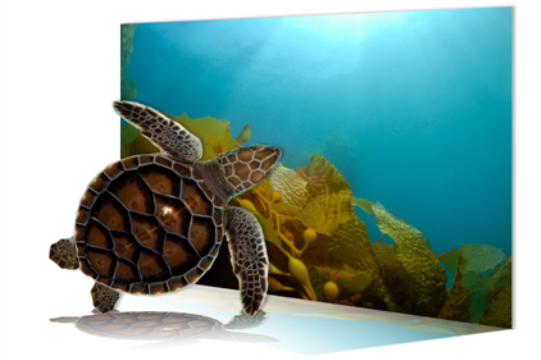
Dilate: The edge of the keyed selection is increased following the effect intensity level chosen below.

Distance: The edge of the keyed selection is increased with a blur following the effect intensity level chosen below.

- Click **Apply** if you need to apply multiple passes of keying. Once you set up your first keying pass values and options, click Apply. You are now ready to set up your next keying pass.

5. Click OK.

Importing Multilayered PSD Files



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

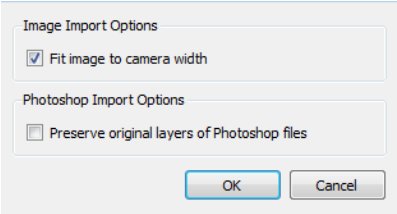
To import multilayered PSD files:

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

   The Open browser opens.

2. Browse for your multilayered PSD image file and click **Open**.

   The Import Options dialog box opens.

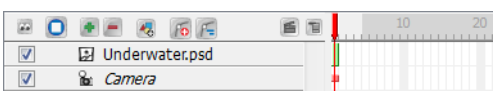


3. In the Image Import Options section, the Fit Image to Camera Width option is enabled by default. This means your image is resized to fit the camera width frame. You can disable this option to import the image at its original size.

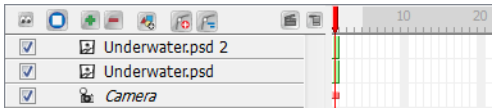
Enabled

Disabled

4. In the Photoshop Import Options section, the Preserve original layers of Photoshop files is deselected by default. This means means that when you import the PSD file, the layers are flattened to create a single image element in your scene.

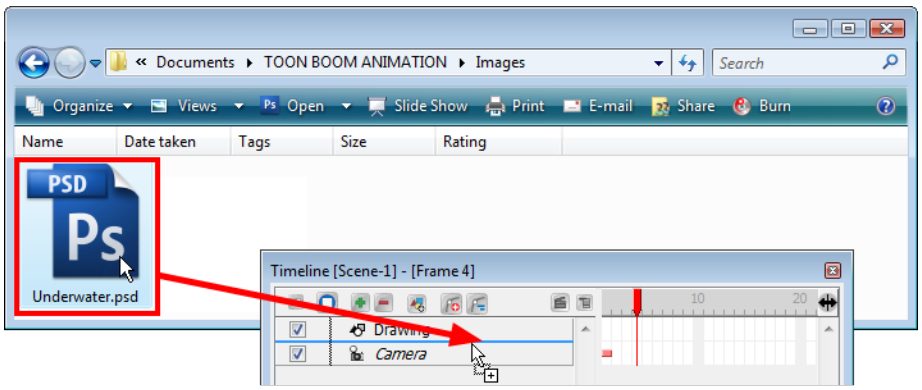


You can enable this option to preserve the PSD file layering, which creates a different image element for each layers contained in your Adobe Photoshop file.



5. Click OK.

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 steps 3 and 4.



Importing AI and PDF files

In Toon Boom Studio, you can import a vector-based Adobe Illustrator or PDF file and preserve its layering when you enable the option during the import. Studio creates a drawing layer for every layer contained in the AI file or creates a drawing layer and separate drawing frames for each page contained in the PDF file.

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 Studio.

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

- Converts CMYK colours to RGB.

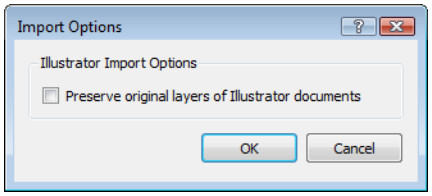
You can convert the colour space of your Adobe Illustrator or PDF files when you save them. See Adobe Illustrator documentation for instructions. However, to ensure the colour results you want, develop your web colours in the web-safe RGB palette.

- 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 multilayered AI or PDF files:

1. Select **File > Import File**.
   The Open browser opens.
2. Browse for an .ai or .pdf image file and click **Open**.
   The Import Options dialog box opens.



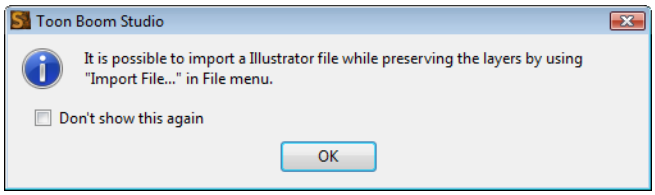
3. **Preserve original layers of illustrator documents**: By default this option is disabled. When you import the .ai or .pdf file, the layers and the pages are flattened. Select this option to preserve the Adobe Illustrator file layering, which creates a different drawing for each layer contained in your AI file.
4. Click OK.

To import an Illustrator 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 in the selected cell and select **Import Illustrator**.

   The Open browser opens.
3. Select an .ai or .pdf file. You can select multiple image files if needed.
4. Click OK.

   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 OK.

   The image is 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 import 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 and given a name corresponding to the movie file. This palette contains all the colours in the movie.

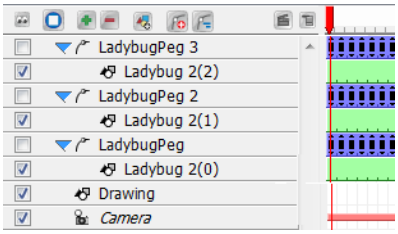
To import a SWF movie:

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

   The Open browser opens.

2. Browse for your video file and click **Open**.

   The video appears in the Timeline view. Each SWF element 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—see Importing Multimedia files into the Library view on page 192 and Linking Templates to Media Elements on page 193.

Importing a Movie

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

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

- AVI
- MPG
- M4V
- QuickTime

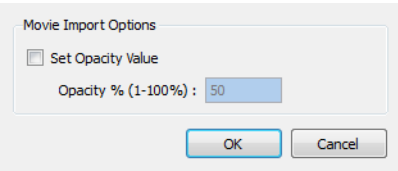
You can also import a SWF movie file—see Importing from Adobe Flash on the previous page.

Importing a Bitmap Movie File

AVI, M4V, MPG and QuickTime movies have one thing in common. They are all bitmap movie files. When they are imported into Studio, a bitmap image sequence is created.

To import an AVI, M4V, MPG or QuickTime movie:

1. Select **File > Import** File.
   The Open browser opens.
2. Browse for your video file and click **Open**.
   The Import Options dialog box opens.

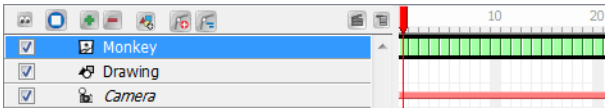


3. In the Import Options dialog box, set the Movie Import Options:

- **Set Opacity Value**: Sometimes you want to import a movie as a reference and you would like it to have a specific transparency value. Select this option to edit the opacity value of the movie.
- **Opacity% (1-100%):** When the Set Opacity Value option is selected , the Opacity% field becomes available. Type in the desired Opacity% value from 1 to 100.

4. Click OK.

   The video appears 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.

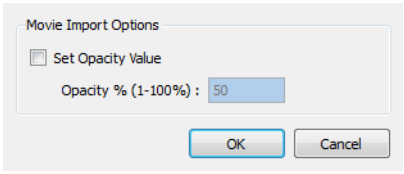
To import a movie as an image sequence:

1. In the Timeline or Exposure Sheet view, select the cell on which you want your movie to start playing.
2. Right-click in the cell and select **Import Movie File as Image Sequence**.

   The Open browser opens.

3. Browse for your movie file and click **Open**.

   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. Select this option to edit the opacity value of the movie.
   - **Opacity% (1-100%):** When the Set Opacity Value option is selected , the Opacity% field becomes available. Type in the desired Opacity% value from 1 to 100.
5. Click OK.

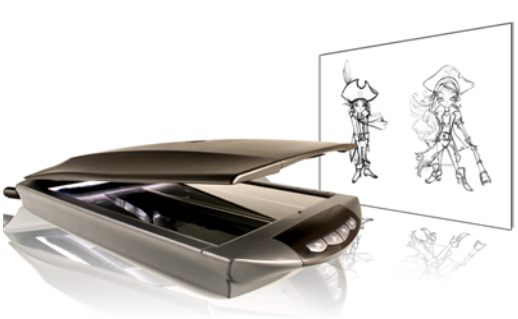
   The image sequence appears in the image layer at the selected starting cell.

Capture

In Toon Boom Studio, you can capture from a device, such as a digital camera to create original stop-motion animation. Studio has an integrated image capture feature–an intuitive and easy-to-use image capture window, which allows you to set up and capture all your images.

Refer to the Stop-motion Animation on page 451 chapter to learn how to capture images and create your own stop-motion animation project.

Scanning Images



Instead of importing images from files, you can use Toon Boom Studio to get images from any TWAIN device, such as scanners and cameras. You can load them as bitmaps into your scene or convert them into vector images that you can edit in 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 a device:

1. Do one of the following:
   - In the Exposure Sheet or Timeline view, right-click in a cell or on an image element and select **Import Images > Select TWAIN Source**.
   - Right-click in a cell from 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 OK.

To scan or get a bitmap from a TWAIN device:

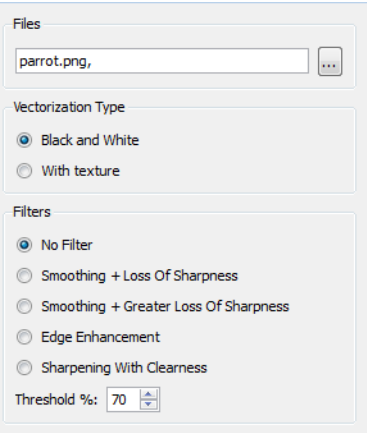
1. Select a cell in an Image element.
2. Right-click in the cell and select **Import Images > From TWAIN**.

   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 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 in the cell and select **Import and Vectorize > From TWAIN**.

   The Import and Vectorize Settings dialog box opens.



3. Set the vectorization settings:
   - **Black and White:** Uses the filters listed below to transform the bitmap into vector art.
   - **With Texture:** Applies the bitmap as a texture on the drawing shape.
4. Select a filter. You may have to experiment with these settings depending on the quality of the images for vectorization.
   - **Smoothing + Loss of Sharpness**: Select this option if the lines in your image are thin. This filter blurs the lines in the image slightly, so thin lines are picked up in the vectorization process.
   - **Smoothing + Greater Loss of Sharpnes**: Select this option if the lines in your image are very fine. This filter blurs the lines in your image more so more lines are transformed in the vectorization process.
   - **Edge Enhancement**: Select this option if the lines in your image are thick. This filter merges fine lines (noise) into larger lines to create cleaner objects.
   - **Sharpening with Clearness**: Select this option if the lines in your images are thick and include a lot of fine detail. 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 OK.

   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 on page 165 topic to learn more about vectorization options.

Library

You can share and reuse any elements you create in Toon Boom Studio as templates. The Library in Studio has ready-to-use templates and is where you can store different elements you create like 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 below
- Library View on the facing page
- Structuring the Library on page 184
- Templates on page 187

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? below
- What is a Template? below

What is a Library?

A library is a folder where you 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. To reuse artwork, drag it into your Timeline view.

A library can be organized using subfolders, you can have several different library folders on your hard drive.

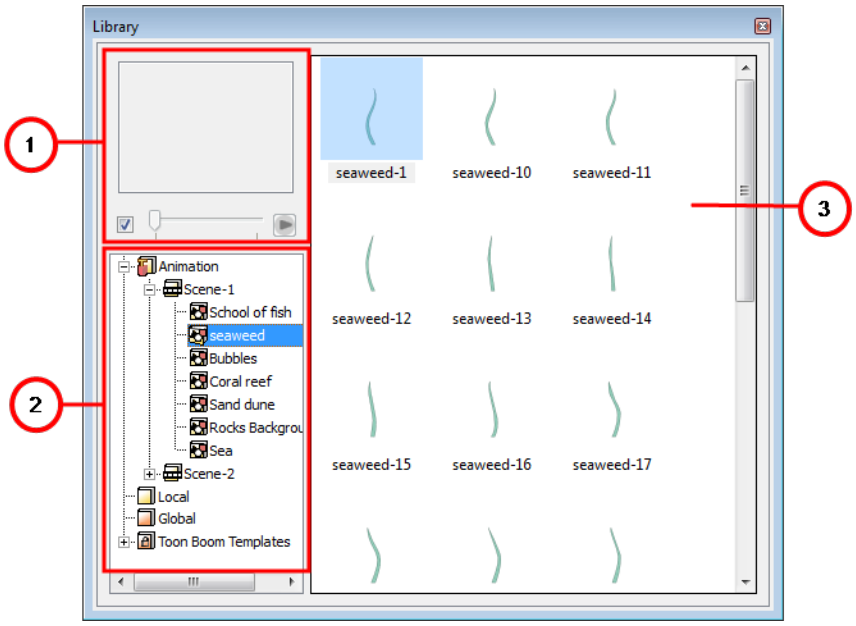
What is a Template?

A template is a copy of the artwork stored in the library,which can be reused in different scenes. Once a template is stored in the library, it is accessible from any project. Dragging a template into your scene copies the content to your timeline and does not create a link to the original. This individual copy can be modified at anytime.

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 reusable 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.

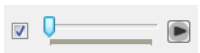
1. Preview
2. Library List
3. Templates List

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:

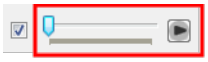
   - In the Library list, select a Scene folder to display the entire scene in the preview area.

   OR

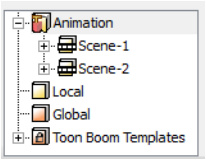
   - In the Template list, double-click on the template you want to preview.

The preview appears 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**: This library stores all the elements and drawings contained in your project. It is organized by scene and is constantly updated as you work in your project.
- **Local**: This library 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's main folder.
- **Global**: This library stores templates that you can 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 interesting artwork organized in subfolders,called catalogs, by categories such as Backgrounds, Storyboarding, Props, Characters, Cut-out Characters, Clip Arts and Special Events. You cannot 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, either as a list or as details.

To change the templates list display:

1. In the Library view's right side, right-click and select **View > List**, **Thumbnails** or **Details**.

Structuring the Library

As you create templates, you will soon realize that they need to be organized. You can create different libraries and catalogs to easily have 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:

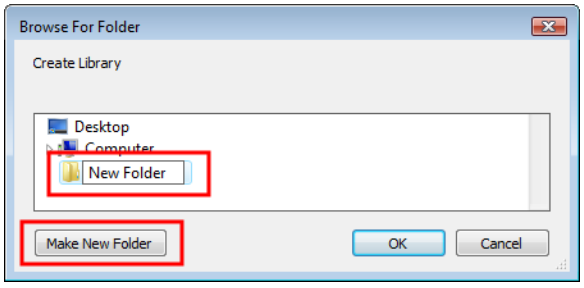
- Creating a Library below
- Opening and Closing a Library on the next page
- Creating a Catalog on the next page
- Renaming a Catalog on page 187
- Deleting a Catalog on page 187
- Refreshing the Library on page 187
- Reloading Default Templates on page 187
- Saving the Library on page 187

Creating a Library

You can create libraries in the Library view.

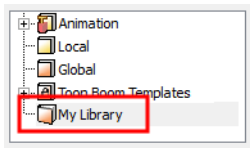
To create a library:

1. In the Library List, right-click and select **Create Library**.
   The Browser window opens.
2. Browse for the location where you want your new library to be stored.
3. Click **Make New Folder**.



4. Give a relevant name to your new library and click OK.

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 and select **Rename Library**.

   The library name becomes an editable field.
2. Rename the Library and press [Enter] to validate.

Opening and Closing a Library

You can load libraries of templates stored on your computer or on another computer through your network.

Libraries make it easier for you to work on productions with other users who 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.

To load and close a library:

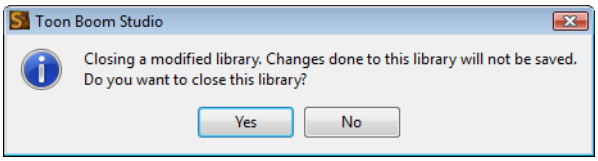
1. Right-click in the library list and select **Open Library**.

   A browser dialog box opens.
2. Locate the library you want to open and click **Open**.
3. The selected library appears in the library list.

To close a library:

1. Select the library you want to close and right-click on 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.
2. Select **File > Save Global Library** to save changes to the library.

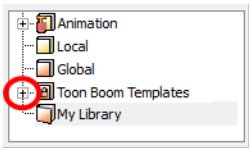
Creating a Catalog

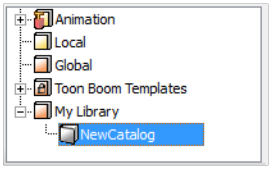
Symbols and templates libraries need to be organized, you can create different subfolders in the Library view so that you can gain easy access to your assets. These subfolders are called *catalogs*.

To create a catalog:

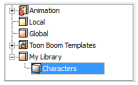
1. In the Library view's left side, select the library to which you want to add a catalog.
2. Right-click on the selected library and select **New Catalog**.

   The new folder appears in the Library. When you have a library with catalogs, click on the plus 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 and select **Rename Catalog**.
   The catalog name becomes 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 want to delete, right-click and select **Delete**.
   The catalog is deleted.

Refreshing the Library

Sometimes you may need to refresh the Template list to see the latest changes.

To refresh the library:

1. In the Template list, right-click and select **Refresh** or press [F5].
   The Template list is 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 and select **Reload Default Templates**.
   The Toon Boom Templates library is 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 below
- Deleting a Template on the facing page
- Editing a Template on the facing page
- Template Properties on page 191
- Importing Multimedia files into the Library view on page 192
- Importing a Template in Your Scene on page 192
- Linking Templates to Media Elements on page 193
- Copying Selected Template Contents into Your Animation on page 193
- Using Paste Special to Update Content from a Template on page 194

Creating a Template

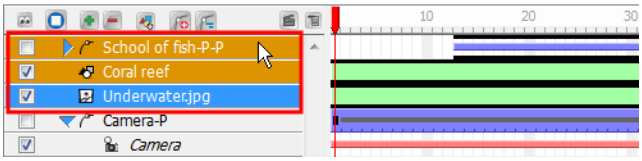
In Toon Boom Studio, creating a template is as easy as selecting what you want from the Exposure Sheet or Timeline view and dragging it into the Library view.

You can create templates from any piece of animation content:

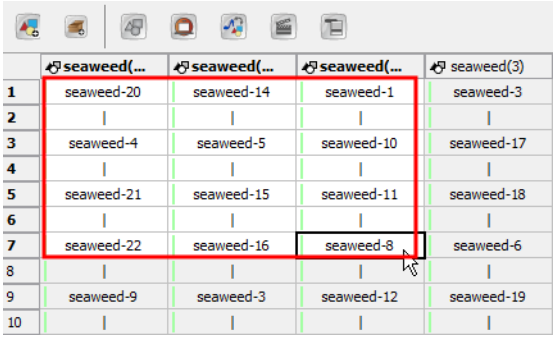
- From the Exposure Sheet view, you can create templates from single or multiple images and drawings, or sounds.
- From the Timeline view, you can create templates from single or multiple layers, or from a selection of frames across multiple layers. You can store anything available in the Timeline view as a template.

To create a template:

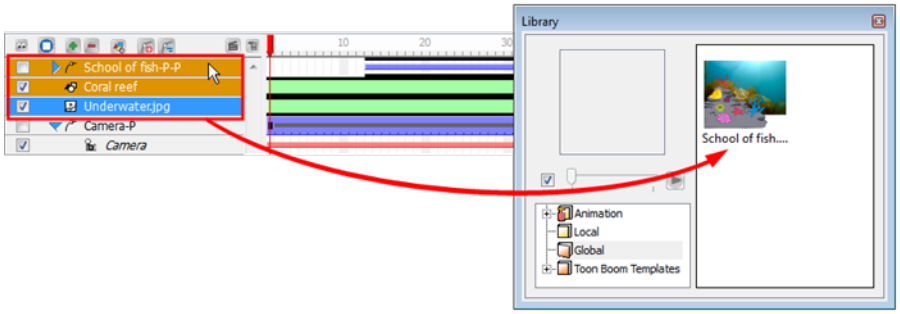
1. Make a selection of what you want to include in the template:
   - In the Timeline view, select some cells or layers.



   OR
   - In the Exposure Sheet view, select some cells from one or multiple columns.



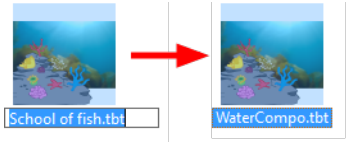
2. In the Library view, select the destination library or catalog from the library list.
3. Drag the current selection to the template list in the Library view.



You can drag a selection to any library or catalog folder icon in the library list and the template is added to that library or catalog.

The template is added to the template list.

4. The name of the template is shown as an active text field, type the desired name for your template and press [Enter] to validate.



To rename a template:

1. In the Library view, select the folder containing the template to rename.
2. Select the template you want to rename from the template list.
3. Right-click on the selected template and select **Rename Template**.
4. Enter the new name in the active text field and press [Enter] to validate.

   The template is 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:

1. In the Library view, select the folder containing the template to delete.
2. Select the template you want to delete from the template list.
3. Right-click on the selected template and select **Delete Template** or press [Del].

   The template is removed from the library.

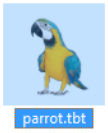
Editing a Template

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.

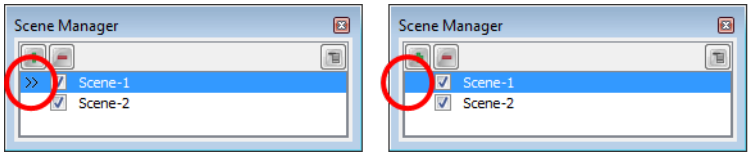
To edit templates:

1. In the Library view, select the folder containing the template to modify.
2. Select the template you want to edit from the template list.

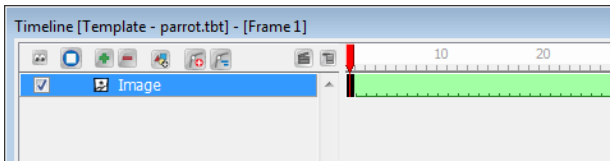


3. In the Library window, right-click on the selected template you want to edit and select **Edit Template** from the pop-up menu.

   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.



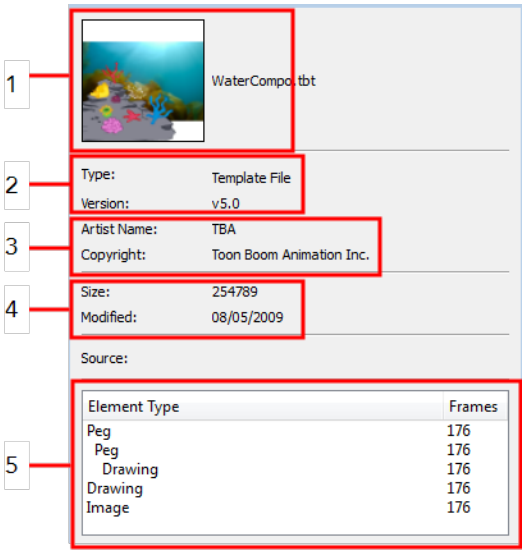
4. Now that you are in template editing mode, you can make any change you want to the contents of the template in any the views. You can adjust timing, add drawings, edit existing drawings or even add layers.

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 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 in the template list and select **Refresh** or press [F5] to refresh the templates so that the thumbnail displays the latest changes.

Refer to the Refreshing the Library on page 187 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 on a template and select **Template Properties**.
   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 in the template list and select **Import >** and one of the following choices:
   - **Import Image File**: Imports a bitmap image.
   - **Import Movie File**: Imports a movie file.
   - **Import Sound File**: Imports a sound file.
   - **Import Template File**: Imports a template created in Toon Boom Studio.

   A browser opens.
3. Browse and select the file you want to import and click OK.

   The file is added in the library.

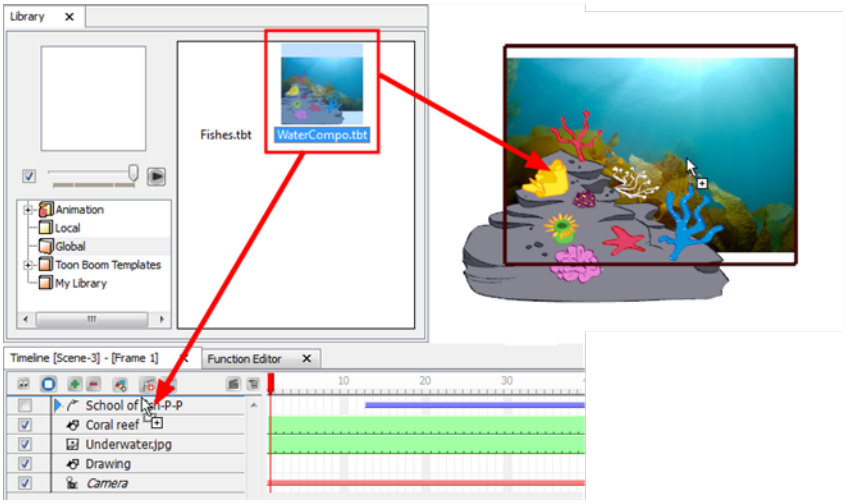
Importing a Template in Your Scene

You can drag a template from the Library view to the Exposure Sheet or Timeline view to add its contents to your animation.

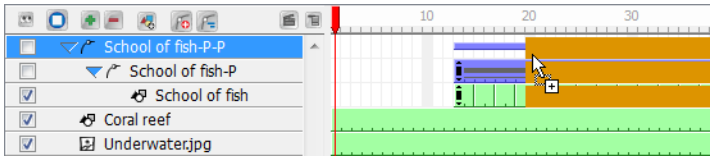
Copying templates into your animation increases the file size of your movies. You can link templates to your animation to keep the file size of your animation small. Refer to the Linking Templates to Media Elements on the facing page topic to learn more about template linking.

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:

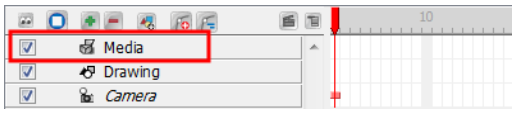
- It keeps the file size of your SWF animations small.
- It updates and manages frequently-used material in a central location.

If the contents of the template are updated, Toon Boom Studio updates it in all animations.

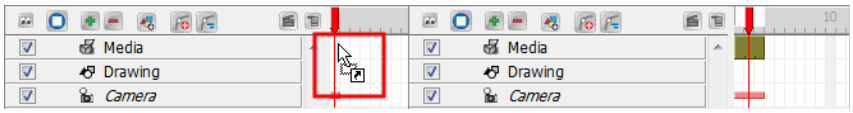
To link a template to a media element:

1. Select **Element > Add > Media**.

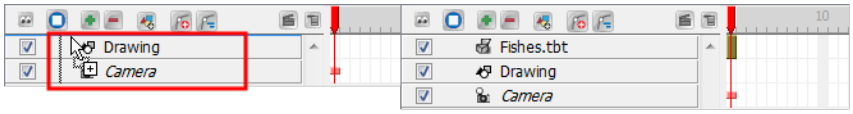
   A new element appears in the Timeline view.



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] as you drag the template to the Timeline view's left side.



   Studio links to the original file.

Copying Selected Template Contents into Your Animation

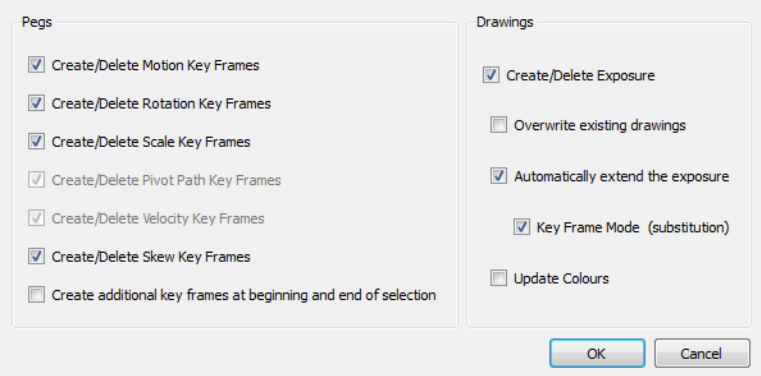
When you drag templates from the Library window, you can open the **Timeline Drag & Drop Preferences** to select the template contents that you want to copy into your animation.

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 cannot complete the drag operation. Refer to the Template Properties on page 191 topic to learn how to open the Template properties.
3. Press and hold [Alt] 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 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

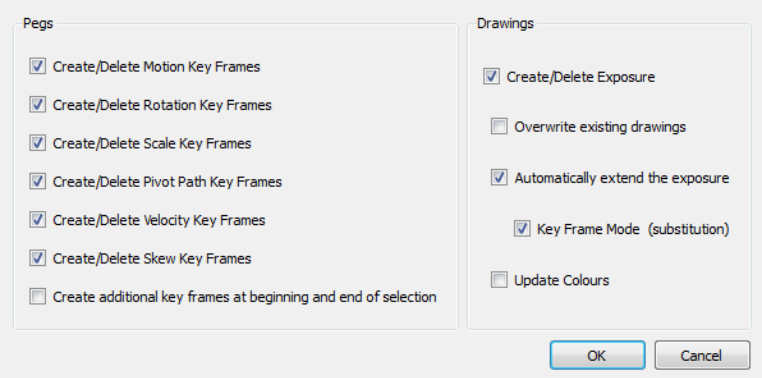
You can use the Paste Special command to update selected content with material stored in a template file. You can use this command to update drawings, timing, layout, as well as palettes.

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 cannot complete the paste operation. Refer to the Template Properties on page 191 topic to learn how to open the Template properties.
3. Select **Edit > Paste Special** or press [Ctrl] + [B] (Windows) or [⌘] + [B] (Mac OS X).

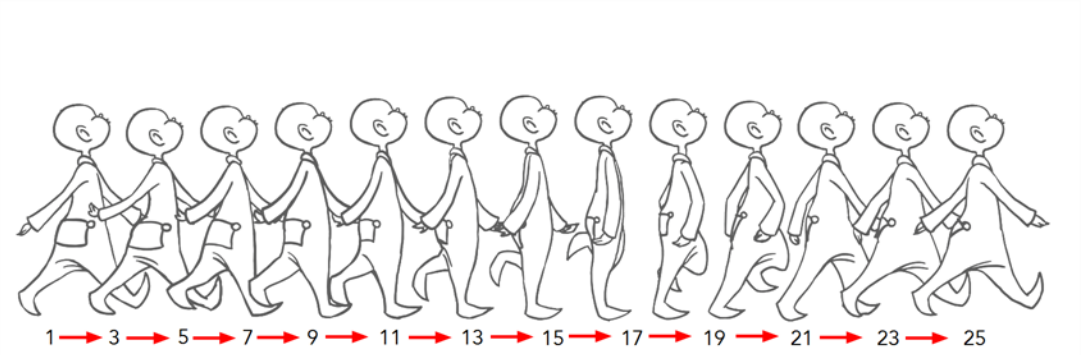
The Paste Special dialog box opens.



4. Select the options from the Paste Special dialog box.
5. Click OK.

Refer to the Animating a Puppet on page 395 chapter to learn more about the Paste Special options.

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—see Creating Motion Paths on page 299.

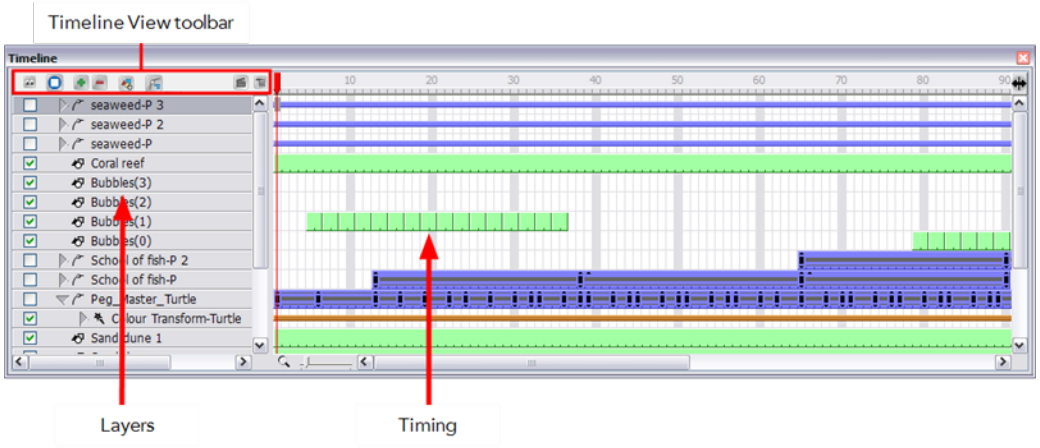
In this chapter, you will learn about the following:

- Understanding the Timeline and Exposure Sheet Views on the next page
- Layers and Columns on page 204
- Filling Exposure on page 217
- Navigating Between Frames and Columns on page 228
- Managing Drawings on page 230
- Preferences on page 232

Understanding the Timeline and Exposure Sheet Views

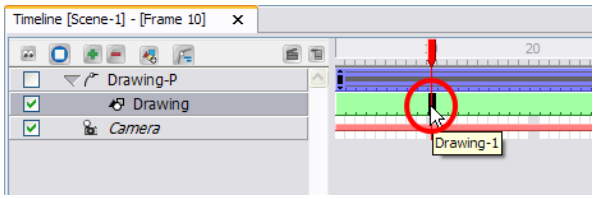
To set your animation timing, you will work mostly with the Timeline and Exposure Sheet views. This section will help you become familiar with these views, how they work and the differences between them.

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 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 below
- Layer Section on the facing page
- Timing Section on page 200

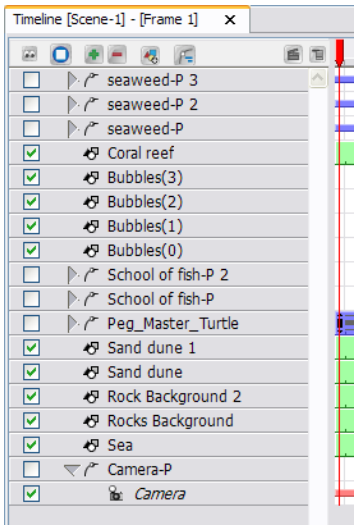
Timeline View Toolbar

The Timeline View toolbar contains eight different buttons allowing you to add, enable and disable layers as well as switch between the different scenes of a same project.

- **Show/Hide All:** Shows or hides all the layers in the timeline.

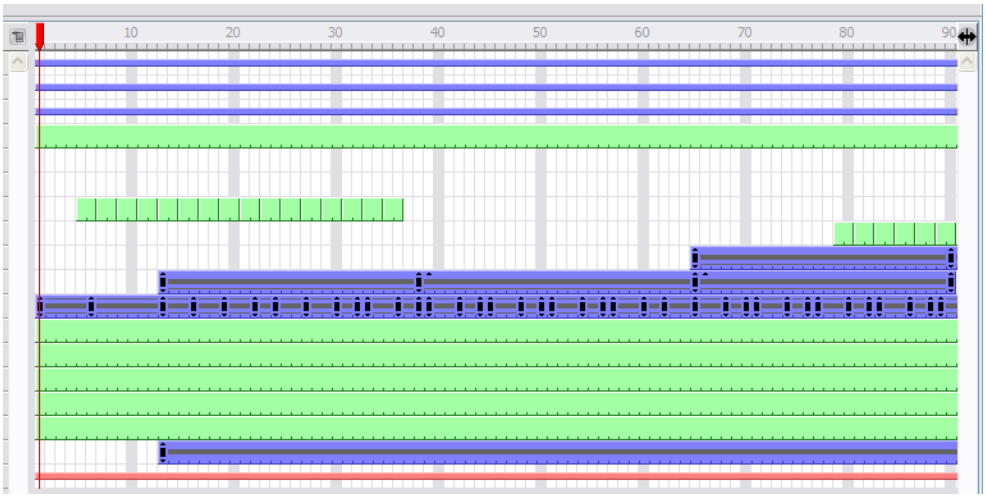
- **Solo Mode:** Turns the Solo mode on or off . The Solo mode lets you see only the currently selected layer, as well as the layer that was selected when you enabled the Solo Mode to use it as a reference without having to disable all the other layers.
- **Add New Elements:** Adds a new element (layer) to your timeline. When you click 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**: Deletes 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 are not able to delete it. Toon Boom Studio's Timeline view must always have at least one drawing layer in it.
- **Add Drawing Element:** Adds 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 appears in the Timeline view. You can then double-click on the new layer to rename it.
- **Add Parent Peg:** Adds 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 appears in the Timeline view and the selected layer is connected to it. You can then double-click on the new layer to rename it.
- **Scene Menu:** Lets you move between the different scenes in your project.
- **Timeline View Contextual Menu:** Displays a drop-down menu with commands related only to the Timeline view.

Layer Section



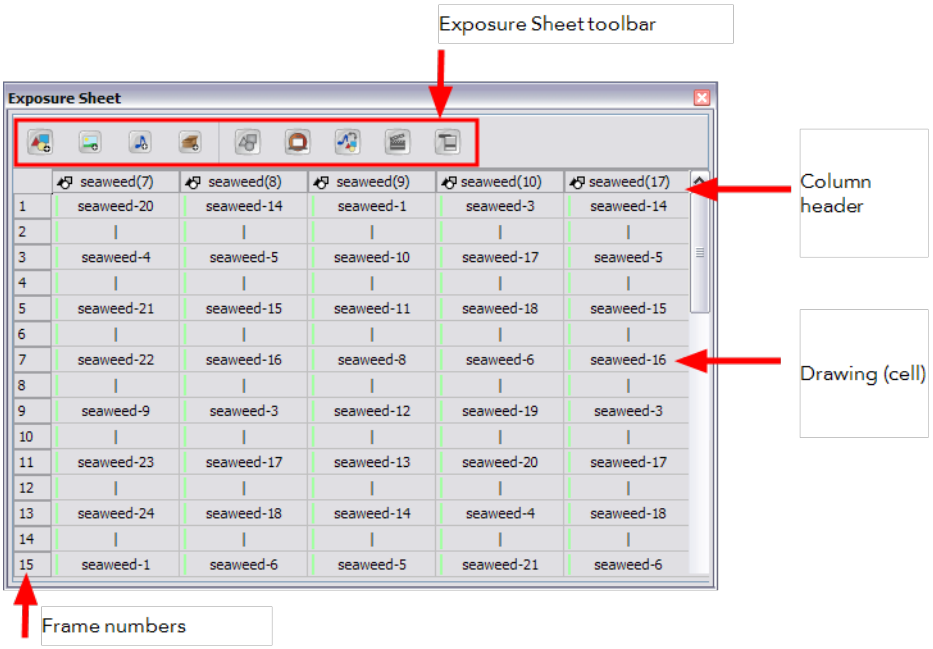
The Layer section is on the left side of the Timeline view. This is where you can add, delete, rename, reorder and attach layers.

Timing Section



The Timing section is 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



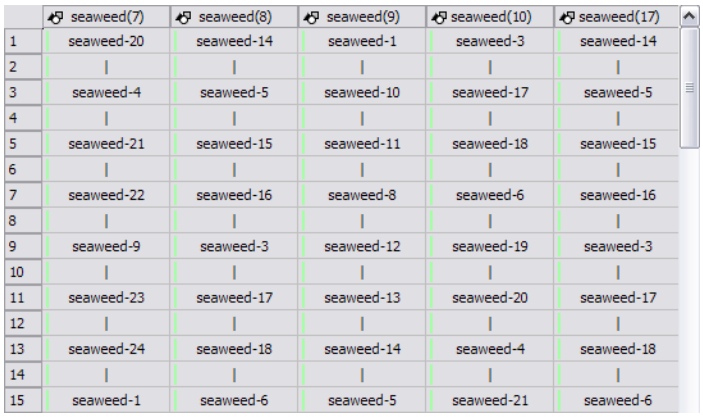
The Exposure Sheet view lets you read your timing vertically where the columns represent drawing layers.

The Exposure Sheet view has two main sections and several other components:

- Main Section on the facing page
- Element List Section on the facing page
- Exposure Sheet Toolbar on page 202

- Column Header on the next page
- Drawing on the next page
- Frame Numbers on the next page

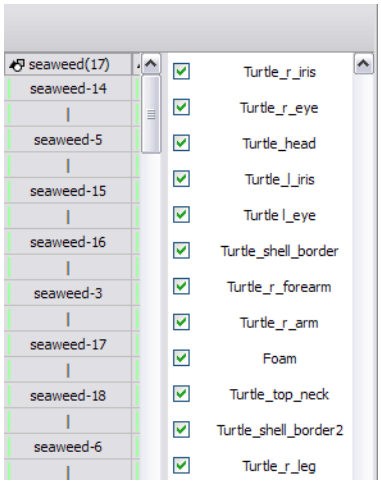
Main Section



	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.

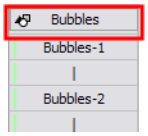
To display the Element List section:

1. In the Exposure Sheet toolbar, click 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.

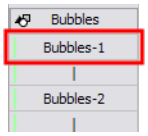
Column Header



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. This menu contains the command that affects an entire column such as renaming, changing the default colour or deleting a column.

Drawing

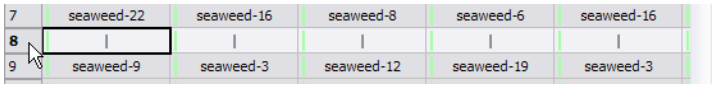


When you see a cell containing a name or number, it represents the drawing you created in the Drawing or Camera view.

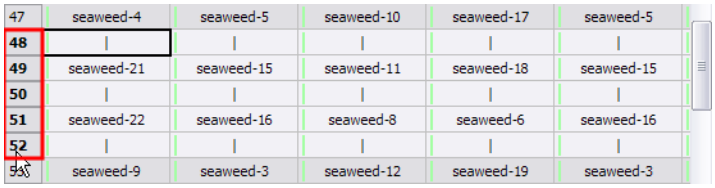
Frame Numbers

The frame numbers are located on the left side of the Exposure Sheet view. They read vertically instead of left to right, as in the Timeline view.

- To go to a particular frame, you click on the frame number.



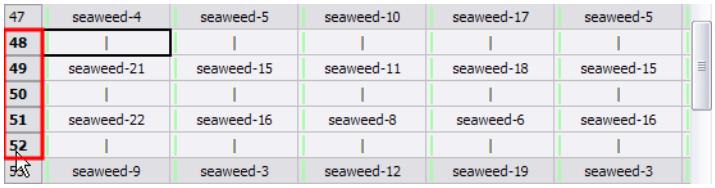
- If you click and drag a selection downwards, you select an entire frame range.



In the Xsheet view, you can remove any selected frame range by pressing the [Del] key.

To delete a frame range:

1. 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.



2. Press [Del] to delete the selection.

Layers and Columns

In 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 is applied to both.

This topic is divided as follows:

- Layer Concepts below
- Layer Types on the facing page
- Adding New Elements on page 207
- Deleting Elements on page 208
- Modifying Elements on page 209
- Expanding and Collapsing Layers on page 215

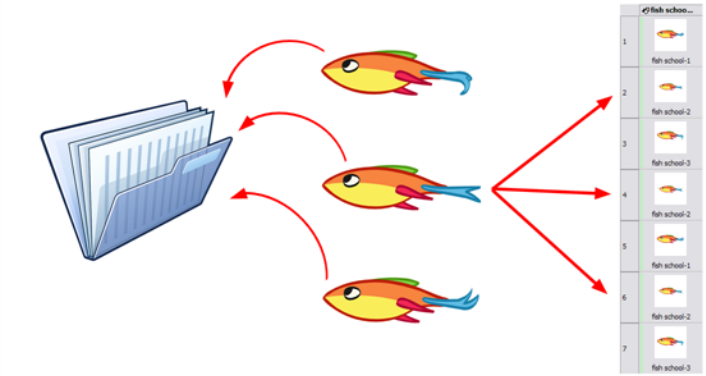
Layer Concepts

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 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—see Duplicating a Drawing on page 230.

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. Any time you need to create a vector drawing, use a Drawing element. Note that 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 on page 161 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 a camera from the Camera list located in the Scene toolbar.

Refer to the Setting the Scene on page 277 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 seven 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 on page 465 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 follow the trajectory that you set in this Peg layer.

In the Timeline view, the Peg element is tagged with the Peg icon.

Peg layers are not visible in the Exposure Sheet view.

Refer to the Setting the Scene on page 277 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 is 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 on page 421 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 on page 233 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 is altered in all the scenes simultaneously.

The Media element is tagged with the Media icon.

Refer to the Setting the Scene on page 277 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 the Timeline and Exposure Sheet views.

This section is divided as follows:

- Adding Layers in the Timeline View below
- Adding an Element from the Top Menu on the next page
- Adding New Columns in the Exposure Sheet View on the next page

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:

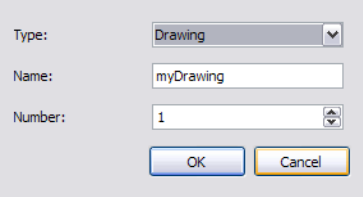
1. In the Timeline's Layer toolbar, click the **Add Drawing Elements** button.

   A new layer appears in the Timeline and Exposure Sheet view.
2. Double-click the layer to rename it.

To add layers using the New Elements dialog box:

1. In the Timeline's Layer toolbar, click the **Add Elements** button.

   The New Elements dialog box opens.



2. In the Type list, select an element type.
3. In the Name field, type a name for the layer. 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, set the number of layers.
5. Click OK.

Adding an Element from the Top Menu

To add a new element from the top menu:

1. 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 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 the Column header to rename the new column.

Deleting Elements

You can delete elements from your scene in two different locations: the Timeline and Exposure Sheet view.

Deleting a Layer from the Timeline View

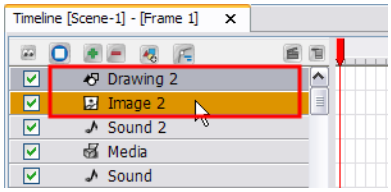
There are three ways to delete a layer in the Timeline view:

- Delete Layers button

- **Top menu > Element > Delete Element**
- Quick access menu

To delete layers in the Timeline view:

1. In the Timeline view, select the layers to delete.



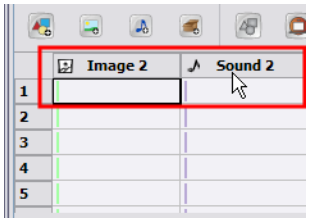
2. In the Timeline's Layer toolbar, click on the **Delete Layers** button or right-click on the selection and select **Delete Element**.

Deleting Columns from the Exposure Sheet View

You can delete columns in the Exposure Sheet view by using the quick access menu or the top menu.

To delete layers in the Exposure Sheet view:

1. In the Exposure Sheet view, select the columns to delete by clicking on their header.



2. From the top menu, select **Element > Delete Element** or right-click and select **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:

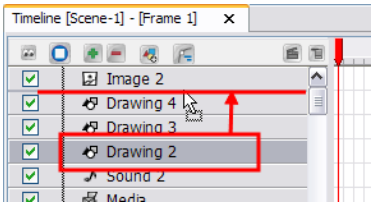
- Ordering Elements below
- Show and Hide Elements on the next page
- Renaming an Element on page 212
- Exposure Sheet Thumbnails on page 213
- Changing the Colour of a Column or Layer on page 213

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.

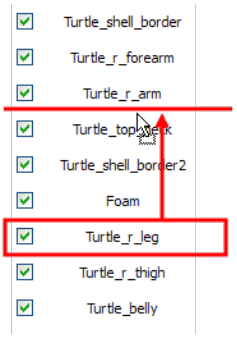
To reorder layers in the Timeline view:

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 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.

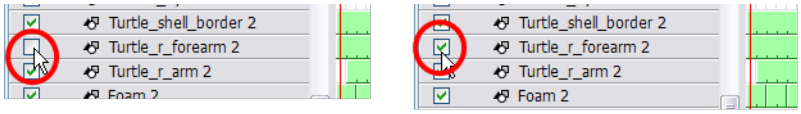
The show/hide operation in the Timeline and Exposure Sheet views are independent from each other and will not affect the other view. For example, hiding layers in the Timeline does not affect the layer's availability in the Exposure Sheet view and vice versa.

To show or hide all layers in the Timeline view:

- In the Timeline's Layer toolbar, click the **Enable/Disable All** button or select **Element > Display > Timeline > Show All**.

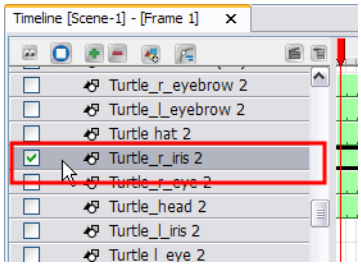
To show or hide individual layers in the Timeline view:

- In the Timeline view, deselect the layer's checkbox or select **Element > Display > Timeline > Show/Hide**.



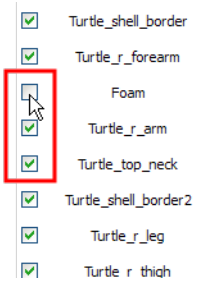
To disable all layers but the selected one:

- Select **Element > Display > Timeline > Hide All Others** from the top menu or select **Display > Hide All Others** in the Timeline contextual menu.



To show and hide columns in the Exposure Sheet view:

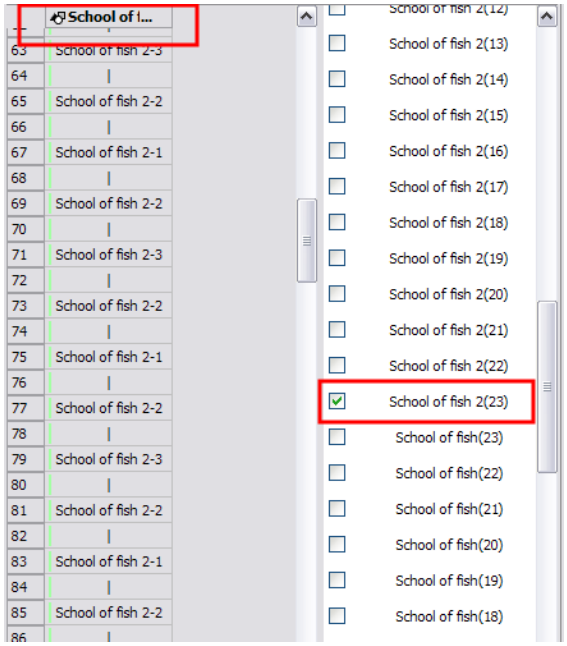
1. In the Exposure Sheet toolbar, click the **Show Element List** button.
2. In the Element List section, show or hide the columns by selecting or deselecting a column's checkbox.



- Select **Element > Display > Exposure Sheet > Hide** to hide a column.

To disable all columns except the selected one:

1. Select **Element > Display > Exposure Sheet > Hide All Others**.



To show all hidden Exposure Sheet columns:

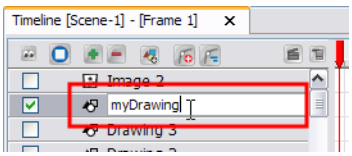
1. Select **Element > Display > Show All Exposure Sheet Elements**.

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.

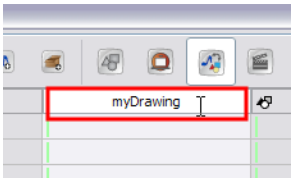
To rename a layer in the Timeline view:

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, type a new name and press [Enter]to validate the modifications.

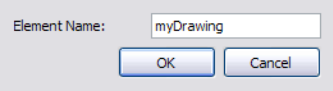


To rename a layer in the Rename Element dialog box:

1. In the Timeline or Exposure Sheet view, select the layer to rename.
2. Select **Element > Rename Element** or right-click and select **Rename Element**.

The Rename Element dialog box opens.

3. In the Name field, rename the layer.



4. Click OK.

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 the **Thumbnails** button or select **View > Thumbnails** from the Exposure Sheet contextual menu or right-click and select **View > Thumbnails**.

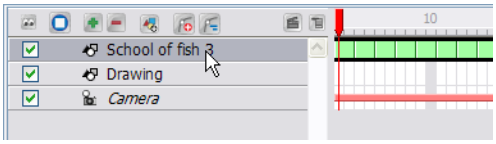
   The thumbnails appear.

Changing the Colour of a Column or Layer

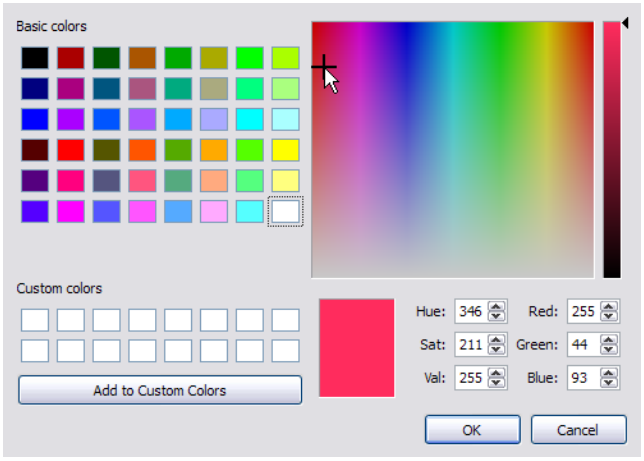
To easily identify layers in your Timeline and Exposure Sheet views, you can change their colour. You can change the drawing exposure colour and track background independently.

To change the drawing exposure colour:

1. In the Timeline or Exposure Sheet view, select the layer whose colour you want to change.
2. Select **Element > Display > Change Colour** from the top menu or right-click the header of the column in the exposure sheet and select **Display > Change Colour.**

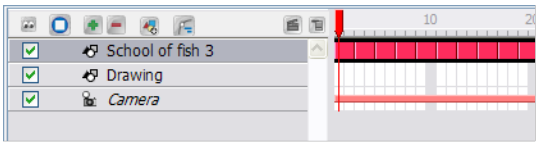


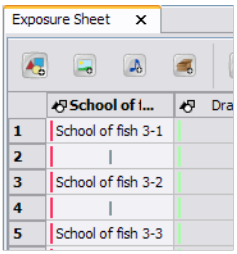
3. In the Select Colour window, select the new colour for your layer.



4. Click OK.

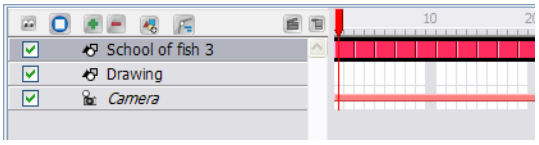
   The layer's colour is updated.



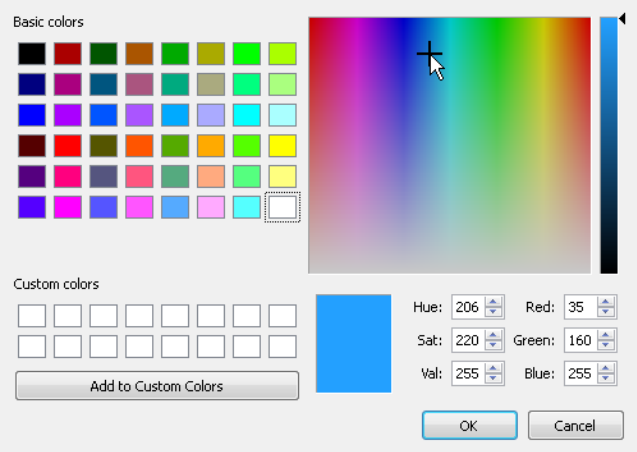


To change the Timeline layer's background colour:

1. In the Timeline view, select the layer whose background colour you want to change.
2. Select **Element > Display > Background Colour** or right-click in the Timeline and select **Display > Background Colour.**

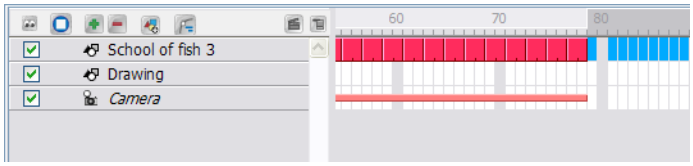


3. In the Select Colour window, select the new colour for your layer.



4. Click OK.

   The layer's background colour is updated.



To reset a layer's colour in the Timeline view:

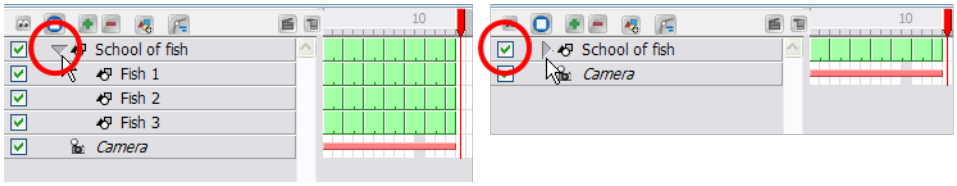
1. In the Timeline or Exposure Sheet view, select the layers whose colour you want to reset and select **Element > Display > Default Colour** or right-click in the Timeline and select **Display > Default Colour.**

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 the **Expand Arrow** button on the layer you want to collapse.

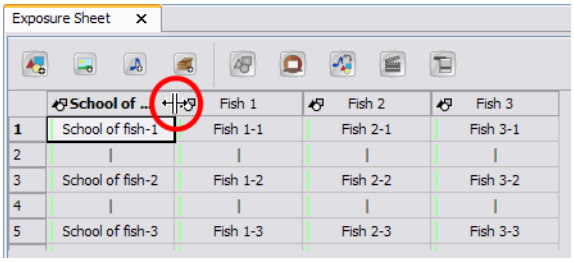


Modifying the Column Width

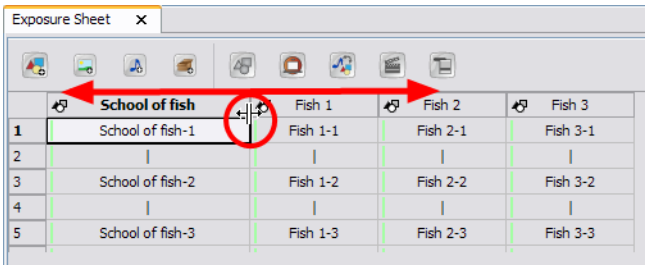
In the Exposure Sheet view, you can change the width of a column. If the name of your column is too long and does not fit in the column header, make the column wider to see it all.

To modify the column's width:

1. In the Exposure Sheet view, place your cursor on the edge of the column header you want to adjust.



2. Once you see the Extend cursor appear, adjust the column width by clicking and dragging the Extend Cursor.



3. To restore all columns to their default width, in the Exposure Sheet contextual menu, select

   View > Reset Column Width or by right-clicking on the column and select **Display > Reset Column Width.**

Filling Exposure

Studio provides different tools to fill in exposures and values, create cycles, and set increments.

This section is divided as follows:

- Typing Exposure below
- Extending Exposure on the next page
- Dragging Cells on page 219
- Increasing and Decreasing Exposure on page 220
- Deleting Exposure on page 222
- Inserting Blank Cells on page 222
- Setting the Exposure on page 223
- Filling a Selection with a Sequence on page 224
- Creating Cycles on page 225

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.

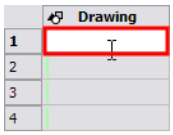
You can only use alphanumeric values (**0-9**, **a-z**, **underscore** (_) and **dash** (-)).

The following shortcuts can be helpful when editing the exposure values:

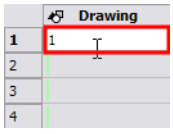
- [Return] to move to the next cell.
- [Esc] to exit the typing mode and return to normal mode.

To type values in the Exposure Sheet view:

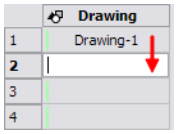
1. In a column, double-click on one cell or right-click on the selected cell and select **Change Label**.



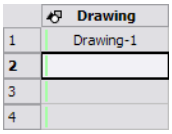
2. Type a value in the cell.



3. Press [Return] to move on to the next cell.



4. Press [Esc] to quit the edit mode.

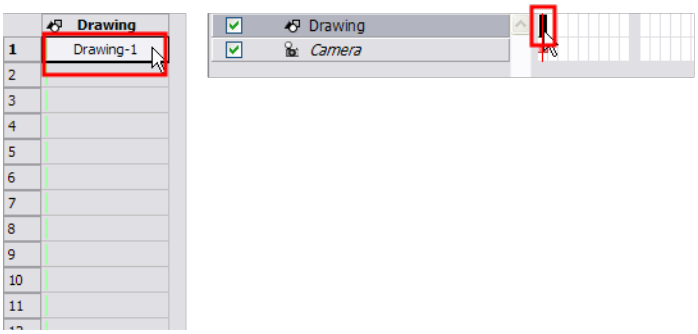


Extending Exposure

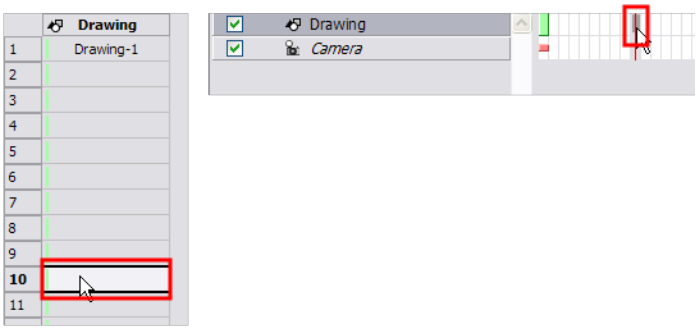
The Extend Exposure feature allows you to select a drawing exposure to make it appear longer in the scene.

To extend a drawing exposure:

1. In the Exposure Sheet or Timeline view, select the drawing (cell) to extend.



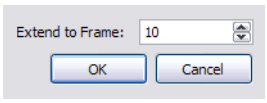
You can also select the last cell of the area where you want the drawing exposure to end, as opposed to selecting the drawing cell directly. The cell must be an empty cell.



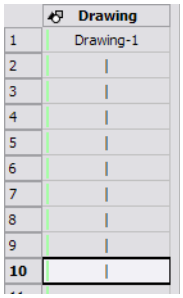
2. Select **Element > Cell > Extend Exposure** or press [Ctrl] + [Shift] + [1] (Windows) or [⌘] + [Shift] + [1] (Mac OS X).

   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 OK.

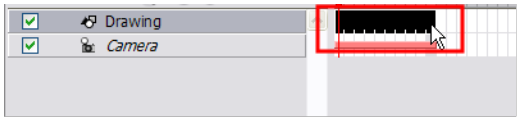


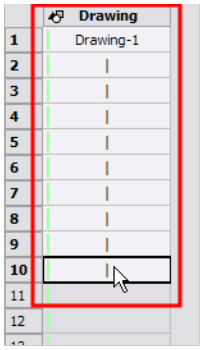
Dragging Cells

To readjust your timing, you can drag one or several cells to a new location in both the Timeline and Exposure Sheet view. You can only drag a cell in the same column or layer.

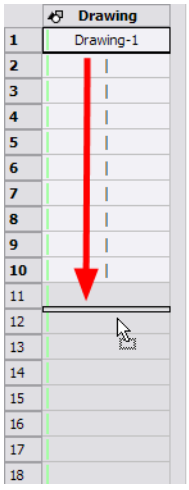
To drag a cell to another location:

1. In the Timeline or Exposure Sheet view, select one or several cells to move.





2. Click on the cell selection and drag it to a new location.

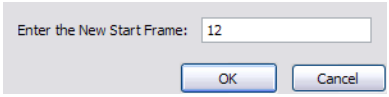


- If you drop the selection, it overwrites the existing cells.

- 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, use the Change Start Frame command.

3. Select **Element > Change Start Frame**.



4. Type the frame number where you want the selected layer to start.
5. Click OK.

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:

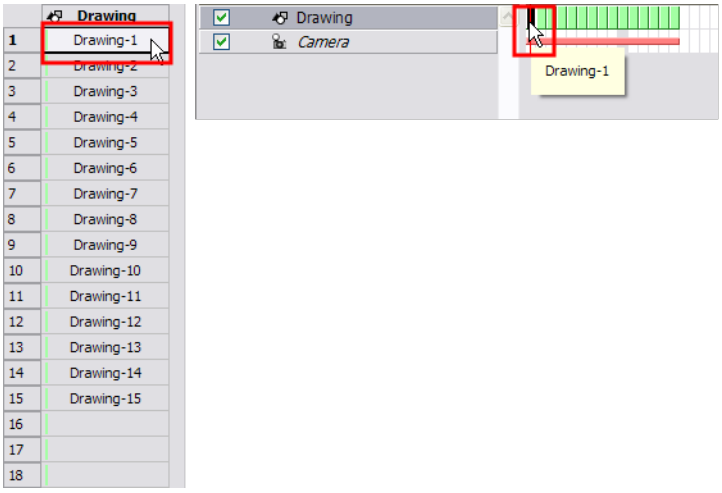
- Add Exposure below
- Remove Exposure on the facing page

Add Exposure

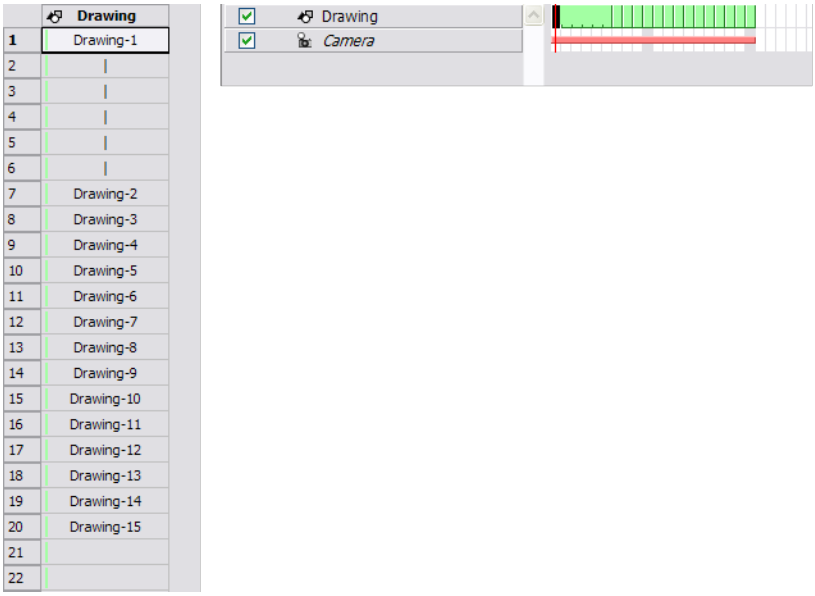
Increasing the exposure adds one more exposures to a selected cell. Repeating this action adds an extra cell every time. This is a quick way of extending a drawing exposure. Increasing an exposure always pushes the existing exposure down.

To add exposure to a drawing:

1. In the Timeline or Exposure Sheet view, select a cell.



2. Select **Element > Cell > Add Exposure** or right-click the selected cell and select:
   - From the Timeline view, **Exposure > Add Exposure**.
   - From the Exposure Sheet view, **Add Exposure**.
   - Press [R].

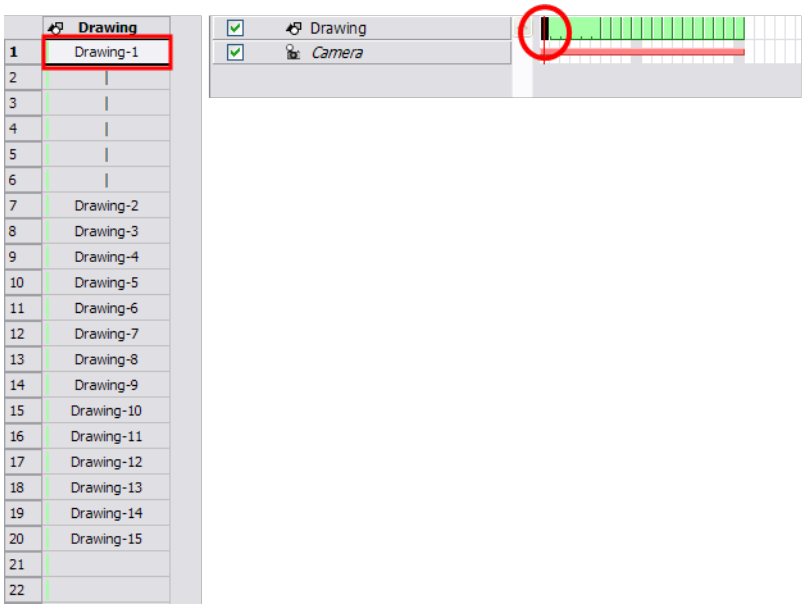


Remove Exposure

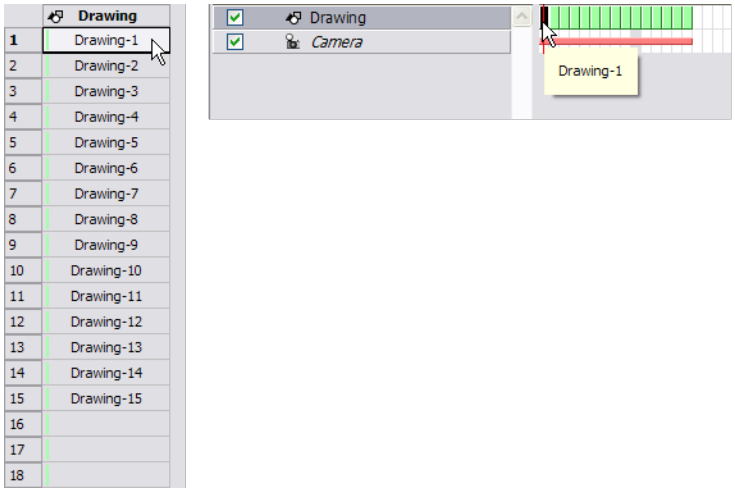
Decreasing the exposure removes one exposure from a selected cell. Repeating this action removes an extra cell every time. This is a quick way to reduce a drawing exposure and remove the exposed drawing.

To decrease the exposure:

1. In the Timeline or Exposure Sheet view, select a cell.



2. Select **Element > Cell > Remove Exposure** or right-click the selected cell and select:
   - From the Timeline view, **Exposure > Remove Exposure**.
   - From the Exposure Sheet view, **Remove Exposure**.
   - Press [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.

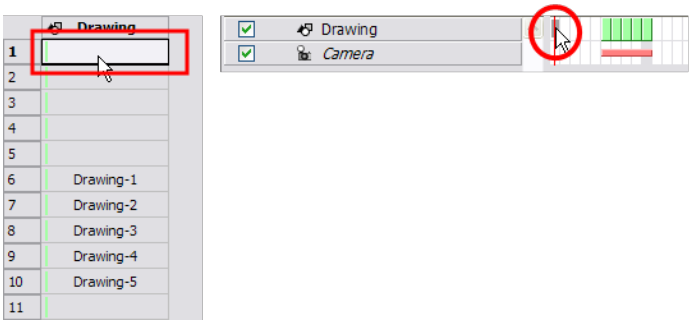
Refer to the Layer Concepts on page 204 topic to learn more about the drawing concept.

To delete selected exposures:

1. In the Timeline or Exposure Sheet view, select all the exposures you want to delete.
2. Press [Del] or right-click and select **Delete Cell**.

To delete blank cells:

1. In the Timeline or Exposure Sheet view, select a blank cell.
2. Select **Element > Cell > Delete Blank Cell** or right-click and select **Delete Blank Cell** or press [Shift] + [E].

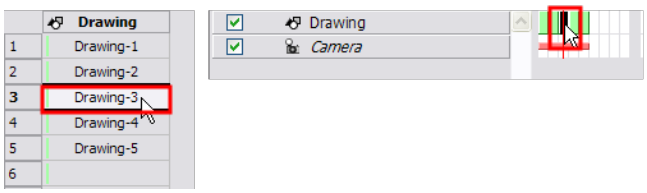


Inserting Blank Cells

Use the Insert Blank Cell option to place an empty cell between other cells. This pushes down existing exposure.

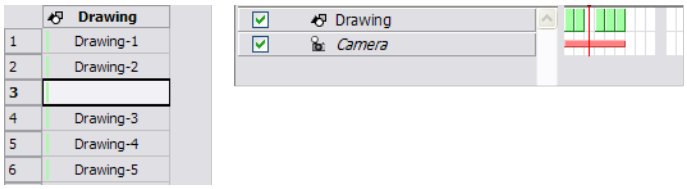
To insert blank cells:

1. In the Exposure Sheet or Timeline view, select the cell where you want to insert a blank cell.



2. Select **Element > Cell > Insert Blank Cell** or right-clickthe selected cell and select **Insert Blank Cell** or press [Shift] + [R].

   The blank cell is inserted.

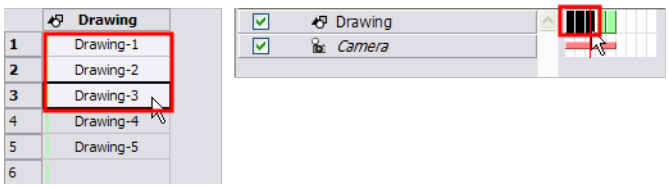


Setting the Exposure

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.

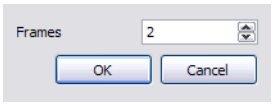


2. In the top menu, select one of the following:

- **Element > Cell > Set Exposure to 1**
- **Element > Cell > Set Exposure to 2**
- **Element > Cell > Set Exposure to 3**
- **Element > Cell > Set Exposure**

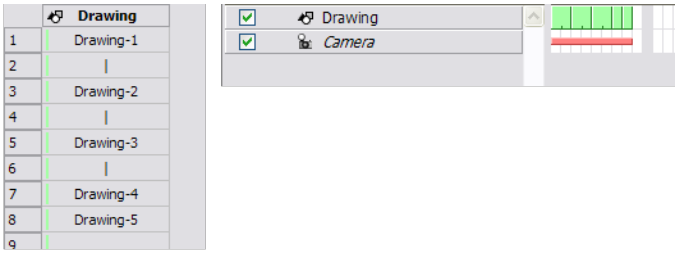
  You can also select the frames in the Timeline view or in the Exposure Sheet and right-click to select **Exposure > Set Desired**.

  - 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 OK

  The new timing is displayed.

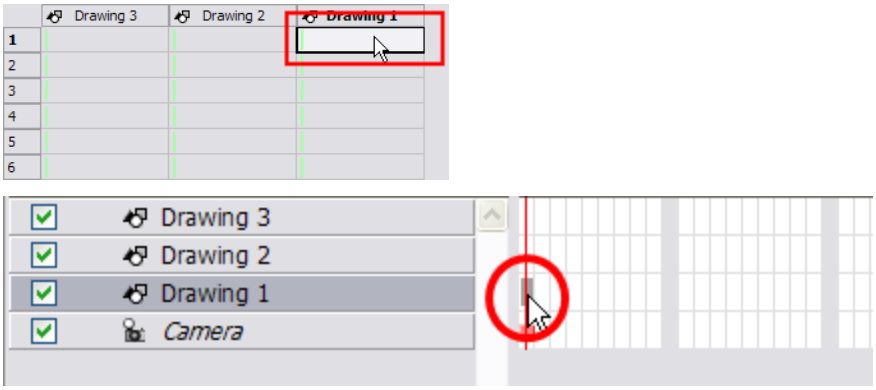


Filling a Selection with a Sequence

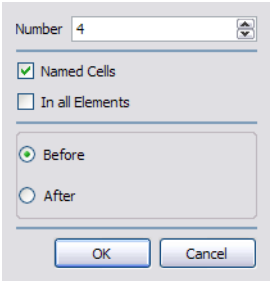
The Insert Cell option is used to create a numbered sequence over a selection.

To fill a selection with a sequence:

1. In the Exposure Sheet or Timeline view, select one cell or a cell range.



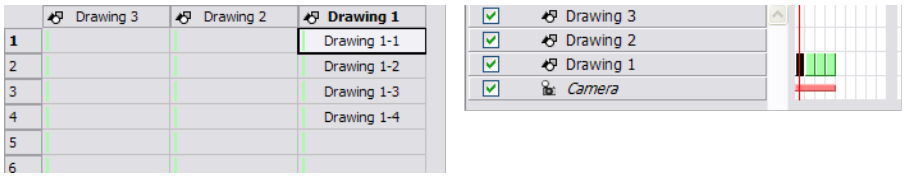
2. Select **Element > Cell > Insert Cell**.
   - If you selected only one cell, the Insert Cell dialog box opens.
   - If you selected a frame range, the timing sequence appears.
   - If you select multiple cells across different layers (i.e. one cell on each layer), the behavior is that Insert Cell adds 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, select the Named Cells option. If you want to insert blank cells, deselect the **Named Cells** option.
5. If you want to insert these new cells in all the layers, select the **In All Elements** option. If you want the new cells to be added only in the currently selected layer, deselect the **In All Elements** option.

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, select the Before option. If you want the new cells to be inserted after the currently selected cell, select the After option.
7. Click OK.



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.

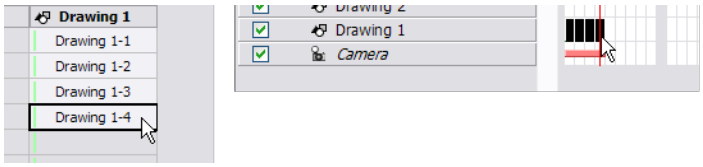
For example, a bouncing ball cycle where the sequence of drawings goes backwards and forwards during the cycle (1-2-3-4-3-2-1).

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.

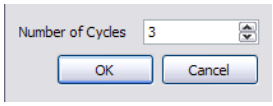
To use the Create Cycle command:

1. In the Timeline or Exposure Sheet view, select the cell range to cycle.

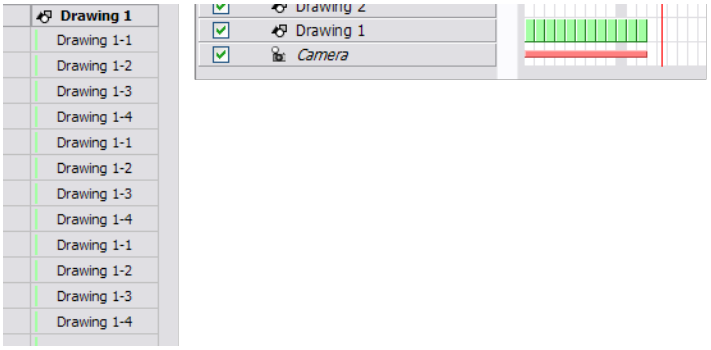


2. Select **Element > Cell > Create Cycle** or right-click and select **Create Cycle.**

   The Create Cycle dialog box opens.



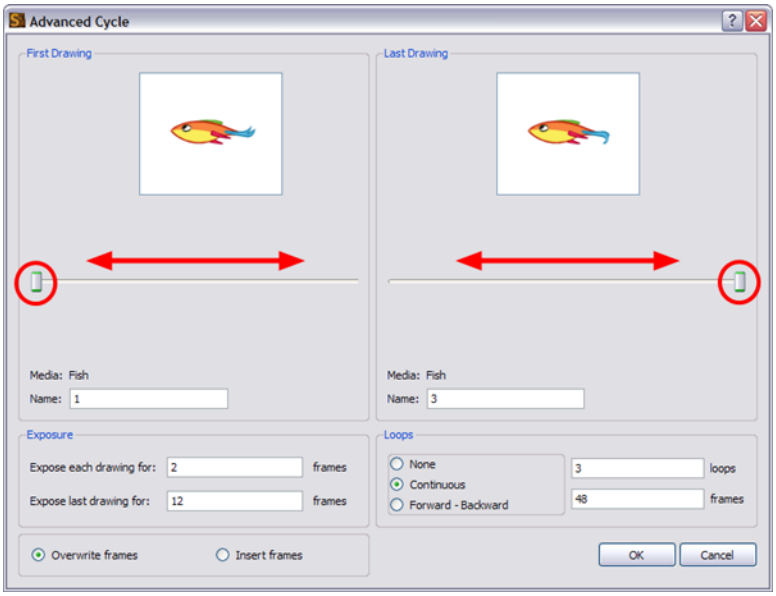
3. Enter the number of cycles you want, including the current selection.
4. Click OK.



To use the Create Advanced Cycle command:

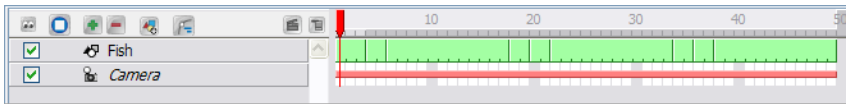
1. Select the element where you want to create the cycle.
2. Select **Element > Cell > Create Advanced Cycle**.

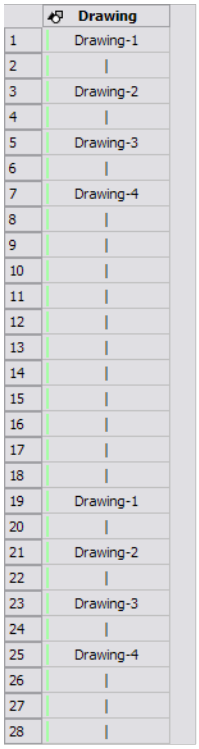
   The Advanced Cycle dialog box opens.



3. In the First Drawing and Last Drawing sections, select the drawings 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 section, 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 number of cells you want it to be exposed in the Exposed Last Drawing For field.
5. In the Loops section, select the number of times you want the cycle to repeat.
   - **None**: If don't want the cycle to repeat.
   - **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.
   - **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**: Type the number of times you want the cycle to repeat.
   - **Frames**: Type the number of frames. By default this field is set to the number of number of frames.

6. Select how you want to insert the cycle.
   - **Insert Frames**: Adds the cycle in the current location.
   - **Overwrite Frames**: Deletes frames that overlap the cycle.
7. Click OK.





	Drawing
1	Drawing-1
2	|
3	Drawing-2
4	|
5	Drawing-3
6	|
7	Drawing-4
8	|
9	|
10	|
11	|
12	|
13	|
14	|
15	|
16	|
17	|
18	|
19	Drawing-1
20	|
21	Drawing-2
22	|
23	Drawing-3
24	|
25	Drawing-4
26	|
27	|
28	|

Navigating Between Frames and Columns

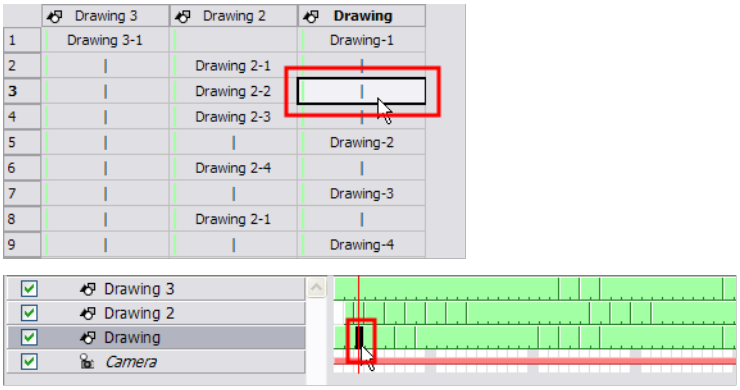
Once a cell is selected in the Timeline or Exposure Sheet view, you can navigate between the layers and drawings using keyboard shortcuts that work in the Camera, Drawing, Timeline and Exposure Sheet views.

You can navigate through:

- Columns
- Drawings
- Frames
- Elements

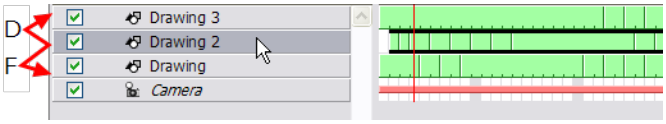
To navigate through the drawings, frames and elements:

1. In the Timeline or Exposure Sheet view, select a cell.

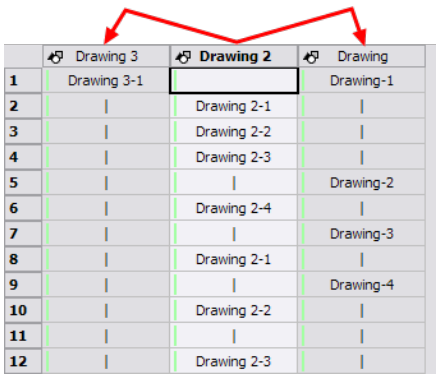


2. Once the cell is selected, you can navigate between:

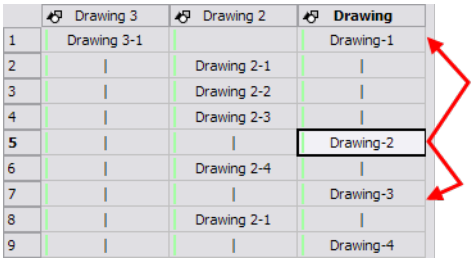
   - **Previous and Next Timeline Layers**: Press [D] and [F].



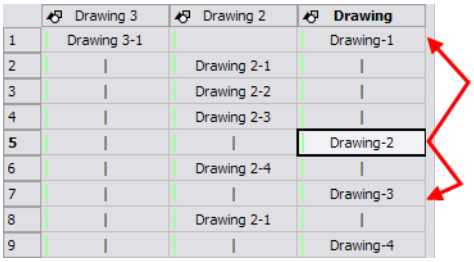
   - **Previous and Next Exposure Sheet Column**: Press [Shift] + [D] and [Shift] + [F].



   - **Previous and Next Drawings**: Press [Shift] + [A] and [Shift] + [S].



- **Previous and Next Frames**: Press [A] and [S].



Managing Drawings

Drawings that are created in 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 below
- Duplicating a Drawing below
- Copying and Pasting Drawings on the facing page

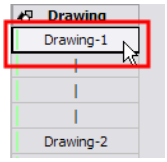
Renaming a Drawing

To rename a drawing select the cell containing the drawing and use the Rename Drawing command from the Exposure Sheet contextual menu.

Do not type the new name in the cell as this creates a new drawing instead of renaming the existing one.

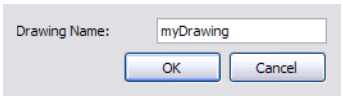
To rename a drawing:

1. In the Exposure Sheet view, select the drawing to rename.

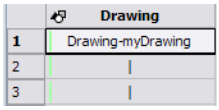


2. Right-click on the selection and select **Rename Drawing**.

   The Rename Drawing dialog box opens.



3. In the Drawing Name field, type the new drawing name.
4. Click OK.



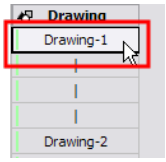
Duplicating a Drawing

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

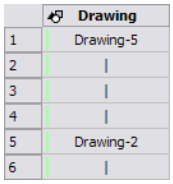
original drawing is not deleted and can still be accessed from the Drawing folder.

To duplicate a drawing:

1. In the Timeline or Exposure Sheet view, select the drawing to duplicate.



2. Right-click on the selection and select **Duplicate Drawing**.



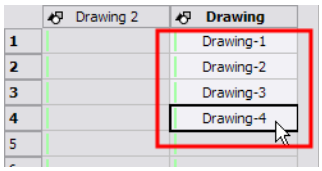
Copying and Pasting Drawings

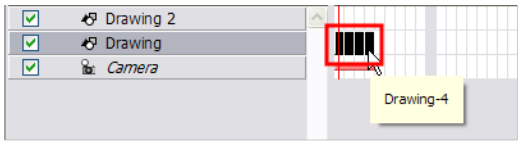
When you copy and paste a selection in the Timeline or Exposure Sheet view, you are not copying and pasting the actual drawings, you are pasting the exposure.

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.

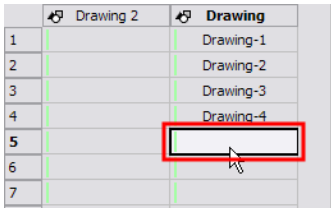
To paste drawings as new objects:

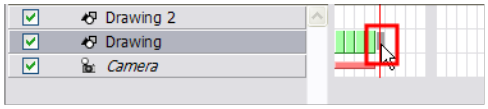
1. In the Timeline or Exposure Sheet view, select the drawings to copy.



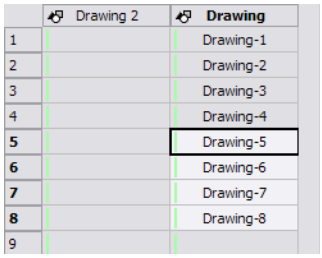


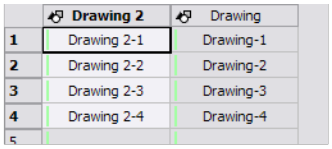
2. Select **Edit > Copy/Copy Cell** or press [Ctrl] + [C] (Windows) or [⌘] + [C] (Mac OS X).
3. In the Timeline or Exposure Sheet view, select the cell where you want your pasted selection to start.





4. Select **Edit > Paste New Object** or press [Ctrl] + [V] (Windows) or [⌘] + [V] (Mac OS X).



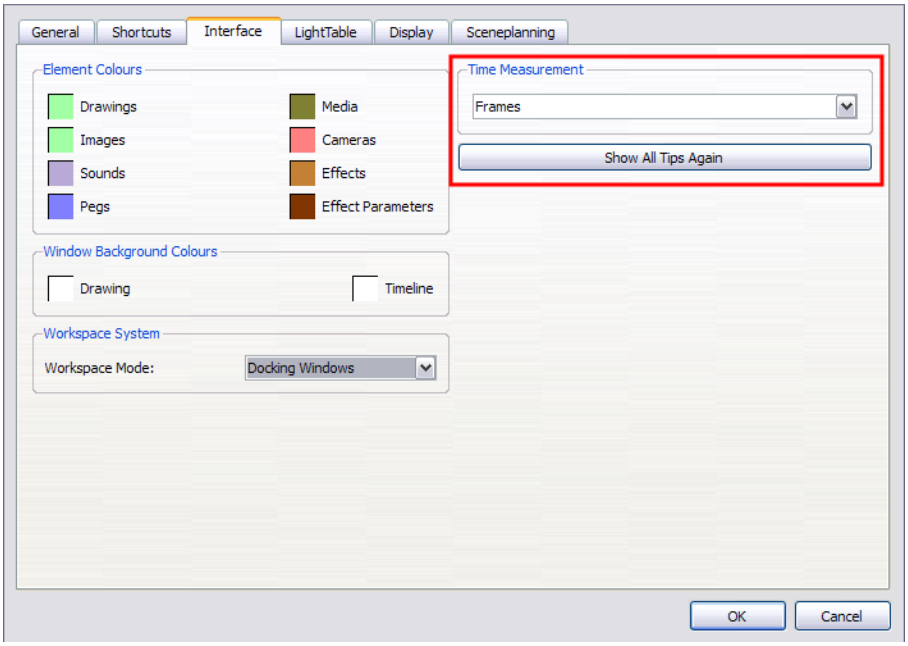


Preferences

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 8.0 > Preferences**.



Time Measurement

The Time Measurement preference is on 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 **Frames** or **Feet and Frames** and click OK.

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 instead of frames per second.

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 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 the next page
- Animating Traditionally on page 241
- Rotoscoping on page 247
- Marking Corrections and Notes on page 252
- Preferences on page 255

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 below
- Auto Light Table on the facing page
- Static Light Table on page 236
- Reposition All Drawings on page 238
- Lock Drawing on page 239
- Clear Drawing on page 240

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 appear with a shade of red and the next drawings are displayed with a shade of green, but you can change the display options in the Preferences panel.

Refer to the Preferences on page 255 topic to learn about the Onion Skin preferences.

To use the Onion Skin feature:

1. Do one of the following to turn on the Onion Skin feature:
   - **Windows**: In the Onion Skin toolbar, click the **Show Onion Skin** button.
   - Mac OS X: In the Top toolbar, click the Show Onion Skin button.
   - Windows and Mac OS X: Select **View > Onion Skin > Turn On Onion Skin**.

2. You can select the number of previous and next drawings you want to show by clicking the button on the Onion Skin toolbar or by following any of the menu paths listed below:
   - Select **View > Onion Skin > No Previous Drawing** or press [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** or press [Shift] + [W].
   - Select **View > Onion Skin > Next Drawing.**
   - Select **View > Onion Skin > Next Two Drawings.**
   - Select **View > Onion Skin > Next Three Drawings.**

   The previous and next drawings appear in the Drawing and Camera views.

Auto Light Table

The Light Table lets you 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.

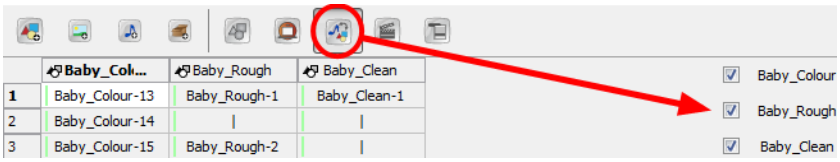
The Light Table feature is only available in the Drawing view.

To use the Light Table feature:

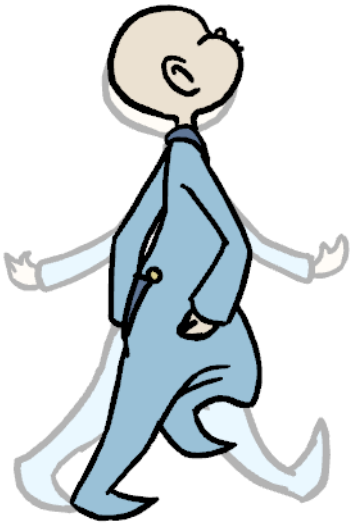
1. Do one of the following:
   - When working in the Drawing view, select **View > Turn On Auto LightTable**.
   - In the Onion Skin toolbar, select the **Light Table** button.

   The drawings are displayed in the Exposure Sheet view.

2. In the Exposure Sheet view, you can deselect the layers you want to hide from the Light Table for the Drawing view.



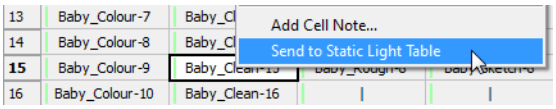
Static Light Table



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:

1. In the Exposure Sheet view, right-click on the cell that contains the drawing that you want to lock onto the Static Light Table.
2. Select **Send to Static Light Table**.



3. 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 the Toggle Static Light Table button.

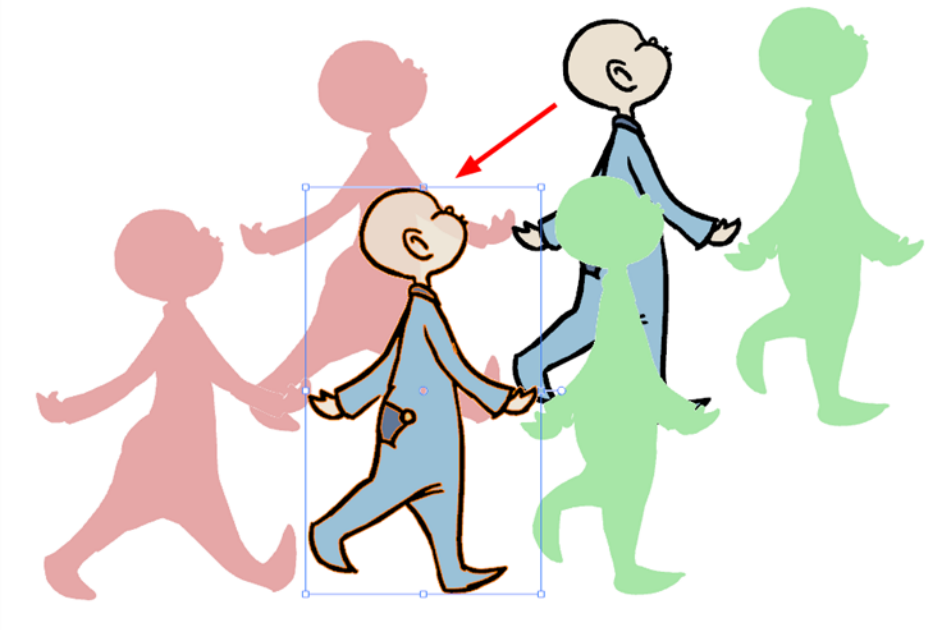
Thumbnails of the drawing appear under the Exposure Sheet columns.

2. Send more than one cell containing drawings to the Static Light Table.
3. Use the check mark 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 want to delete and select **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, scaling, rotation, or skewing of all the drawing strokes on every frame belonging to the same layer.

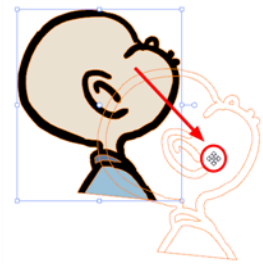
To reposition all drawings:

1. In the Drawing Tools toolbar, select the **Reposition All Drawings** tool or press 1 to alternate between all the tools under the Select Tool drop-down menu.

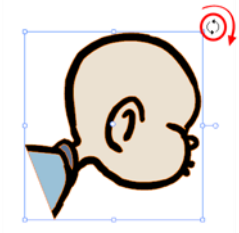
   In the Drawing view, every stroke that composes your drawing is selected.

To deform or reposition a selection:

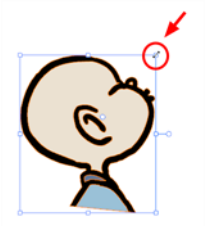
- To reposition, click and drag your selection to a new area.



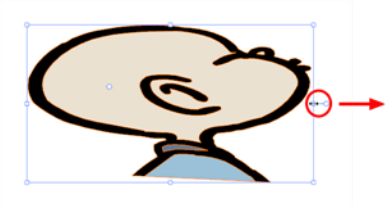
- To rotate, move the selection box handle in a circular motion.



- To scale, pull or push 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 the pointer, every drawing contained in the drawing layer you repositioned, scaled, rotated or skewed follows the same transformation.

Lock Drawing

Although the Reposition All Drawings tool can be quite useful, sometimes you may need to reposition all but a few drawings. For example, one or two elements, such as a background or point of reference might have to remain absolutely fixed. The Lock Drawing option is a good way to keep certain individual frames from moving, or from accidentally being drawn on.

To use the Lock Drawing option:

1. In the Exposure Sheet view, select the cell that contains the drawing you want to lock.
2. Right-click on this cell and select **Lock Drawing**.

   The cell containing the drawing is locked as indicated by the lock icon beside the cell name.

3. In the Timeline view, you can also right-click on a selected layer and select **Lock > Lock** or another desired option.

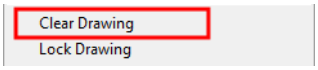
Clear Drawing

Another feature that makes drawing by hand much easier is the Clear Drawing feature in the Exposure Sheet view. Often when you are drawing with your Wacom tablet directly in the software, you may decide that you want to start a particular drawing in an action sequence from scratch.

If you delete the frame from the Timeline view, there is a gap in your timeline. If you use the Select tool to select all your drawing strokes and delete them, you risk missing a few strokes while taking twice as long to do so.

To use the Clear Drawing command:

1. In the Exposure Sheet view, right-click on the cell that contains the drawing strokes you want to delete.
2. Select **Clear Drawing**.



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 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 below
- Cleaning Up on page 243
- Power Painting on page 245
- Setting the Timing on page 246
- Playing Back Your Animation on page 246

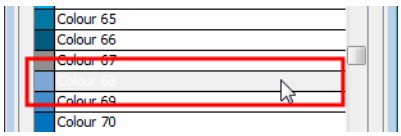
Animating

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. The head, arms, and clothes are added later, during the secondary animation.

For a satisfactory animation, complete the main action before adding all the details. If you start animating the details right away, you lose a lot of time if you have to do corrections, and your animation often looks too rigid.

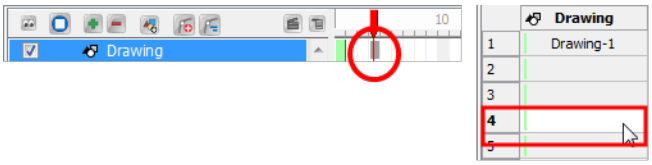
To animate:

1. In the Timeline view, create a new drawing layer and name it **Rough**.
2. In the Drawing Tools toolbar, select the **Brush** tool or press [@].
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.



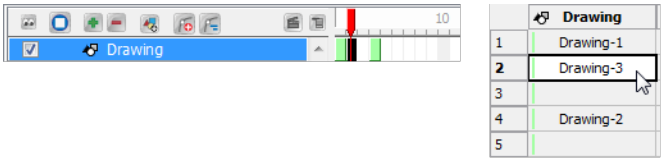
4. In the Timeline or Exposure Sheet view, select the cell where the first drawing will appear.
5. In the Drawing or Camera view, draw the first key drawing.

6. In the Onion Skin toolbar, click the Enable Onion Skin button.
7. From the Onion Skin toolbar, click 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.
8. In the Timeline or Exposure Sheet view, select the cell where your next key drawing will appear.

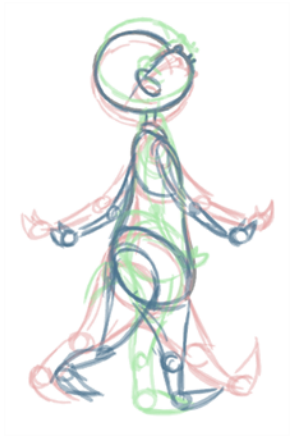


9. In the Camera view, draw your second key drawing.

10. 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.

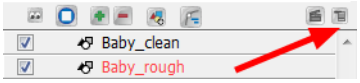
You need to add a new drawing layer to draw your clean drawings. This is the equivalent of adding a sheet of paper and tracing over the rough using the animation disk.

If you plan on tracing your animation in the Drawing view, you need to turn on 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 the Add Drawing Layer button.
2. Rename your new layer **`Clean`**.

3. In the Timeline view, select your rough layer,
4. Click the Menu button, and 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 a drawing tool.
7. In the Colour view, select the colour 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 deselect them temporarily so that only your rough animation and your clean-up layer are displayed. You can do this in two ways, by deselecting these layers in the Timeline to affect what is seen in the Camera view, or by disabling them in the Exposure Sheet view to affect the Drawing view.
10. In the Onion Skin toolbar, select 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.

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 saves you a lot of time when painting your animation.

You can use the onion skin to select a location.

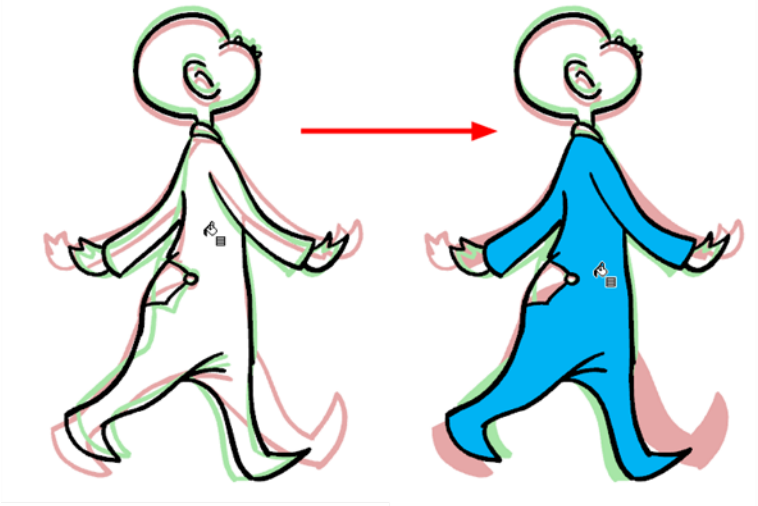
To learn more about painting, colour palettes and Onion Skin, see Adding Colours on page 125

To power paint drawings in an element:

1. Do one of the following to enable the Onion Skin feature:
   - Windows: In the Onion Skin toolbar, click the Show Onion Skin button.
   - Windows and Mac OS X: Select **View > Onion Skin > Turn On Onion Skin**.
2. You can select the number of previous and next drawings you want to show by clicking on the button from the Onion Skin toolbar or by using the **View > Onion Skin** menu.

   The previous and next drawings appears 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**.
5. Press [Shift] + [Alt] and click a zone that many drawings in the element share.



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, see Layers and Timing on page 197.

Playing Back Your Animation

You can play back your animation in the Camera view using the Playback toolbar.

To play back your animation:

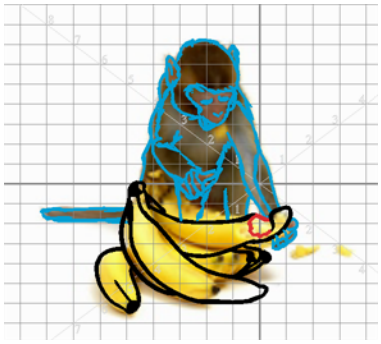
1. Be sure you are currently using the Camera view, as this feature is not available in the Drawing view.
2. In the Timeline view, deselect the layers you do not want to show during playback.
3. In the Playback toolbar, click the Loop button if you want the playback to loop.
4. In the Playback toolbar, click the Play button to start the animation.

Rotoscoping

Maybe you have heard about this process, but do not know how to use it. Perhaps you have an idea of how this technique works, but do not know where to begin. This section will help you get started.

- What is Rotoscoping? below
- Selecting a Video on the next page
- Tracing the Character on page 249
- Painting the Animation on page 251

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 reasons you may chose to use this process:

- 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 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.

Because rotoscoping is so realistic, it leaves little room for exaggeration, movement, squash and stretch, or a very cartoony look. If you use this technique, make sure it suits your project.

Selecting a Video

Selecting a video to rotoscope is simple. You can:

- 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, or
- 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 these formats, you can easily convert it in an editing software.

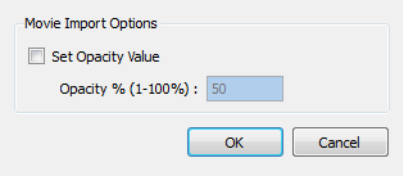
Your clip does not need to have a very high resolution, however the higher the resolution, the more detail you see. A minimum resolution of 300x200 is recommended.

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.

To import your video:

1. Select **File > Import File**.
2. In the Open dialog box, browse for your clip and click **Open**.
3. In the Import Options dialog box, do **NOT** set an opacity value.

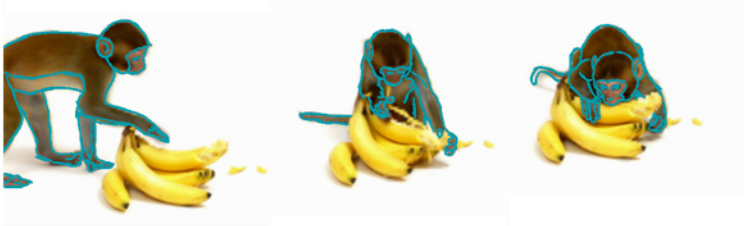


4. Click OK.

Tracing the Character

Before you start tracing your movie, set up your brush with a low smoothness and a lively tracing colour. This is so your lines will be more faithful to the video still and you will be able to see your lines clearly.

Tracing



When you trace over your imported movie, concentrate on one element at a time. For example, if there is a boy running with a balloon, trace the boy first and then the balloon. This helps when trying to create separate movements. The boy moves differently than a balloon, even if they are 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 in on your image to see the details better.
4. Trace your first frame.

5. In the Timeline view, select the second cell and trace the second image.
6. If necessary enable **Onion Skin** to see your previous drawings.

7. Repeat the process until the animation is entirely traced.

Fine Tuning the Animation

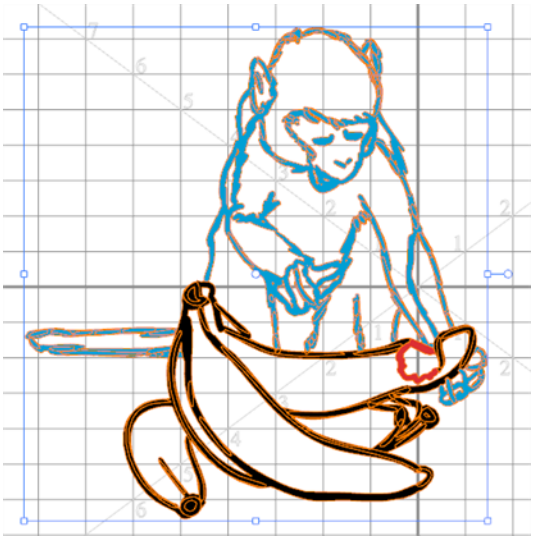
Once your animation is traced, it is a good idea to deselect the live-action clip layer or turn off the Light Table, and then go over your animation to fix the little details, such as open zones and uncompleted lines.

To learn more about closing gaps, see Adding Colours and to learn more about making invisible strokes, see Drawing and Design on page 81.

If you want your final project to be lighter once you are done tracing, select your lines and flatten them.

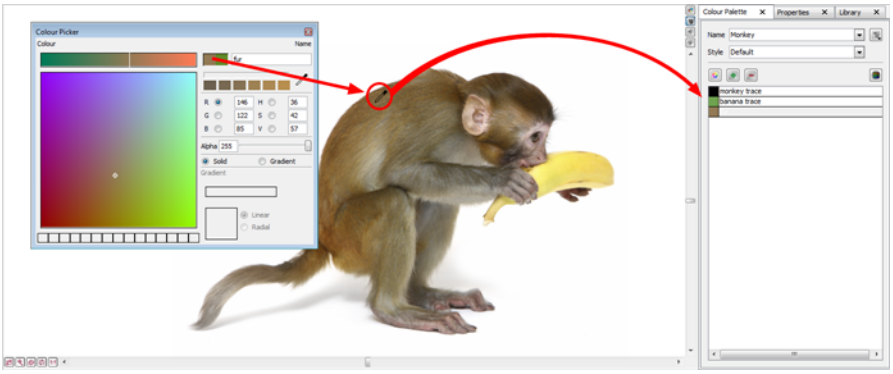
To flatten your drawings:

1. In the Drawing Tools toolbar, click 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. 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 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 the **Eye Dropper** button.
6. In the Camera view, pick a 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, see Exporting Your Project on page 523.

Marking Corrections and Notes

Toon Boom Studio has integrated several features to make adding notes and making visual corrections easy.

- Annotation Elements
- Notes

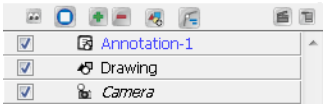
Annotation Elements

It does not matter if you want to place notes, suggestions or corrections to the anatomy of a drawing, you will find the annotation levels are invaluable.

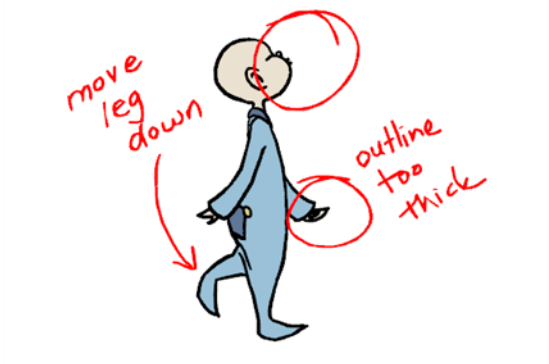
To create an annotation element:

1. Do one of the following:
   - From the Timeline view's contextual menu, select **New > Annotation**
   - Select **Element > Add > Annotation**.
   - In the Exposure Sheet View toolbar, click the Add Annotation button.

   The Annotation element appears in the Timeline and Exposure Sheet view.



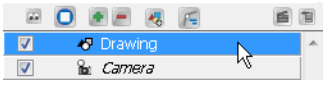
2. Draw or make notes on this layer.



You can also select an existing Drawing element and convert it to an Annotation element.

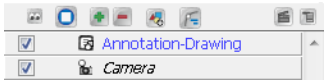
To set a Drawing element as an Annotation element:

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**.

   The colour of the element name changes from black to blue and the prefix **`Annotation`** is 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. From the Timeline view's the contextual menu, select **Annotation Elements > Hide All Annotation Elements** or select **View > Annotation Elements > Hide All Annotation Elements**.

Working with Notes

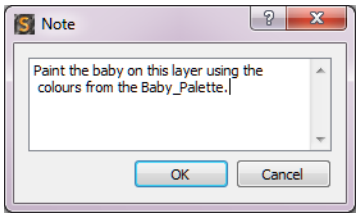
Layer Notes

Another way to write small reminders to yourself or for others is by writing a layer/element note.

To write a layer/element note:

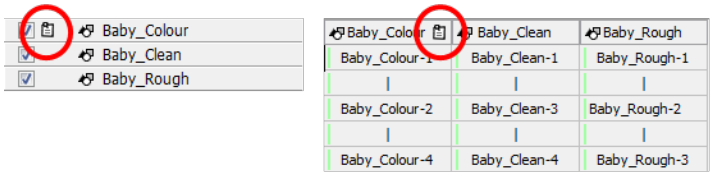
1. In the Timeline view, right-click on a layer and select **Add Element Note** or select **Element > Add Element Note**.

   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 is 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 reappears.

Cell Notes

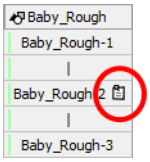
To go into greater detail or to make notes more specific, you can also create notes for an individual cell or frame.

To create a cell note:

1. In the Exposure Sheet view, select the cell you want to make notes on.
2. Right-click and select **Add Cell Note** or select **Element > Cell > Add Cell Note**.

   The Note dialog box opens.
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 is indicated by a small note icon on the respective cell in the Exposure Sheet view.



   Later on, if you want to edit or reread your own message, or access the message of another person, right-click on the cell and select **Update Cell Note** or select **Element > Cell > Update Cell Note**.

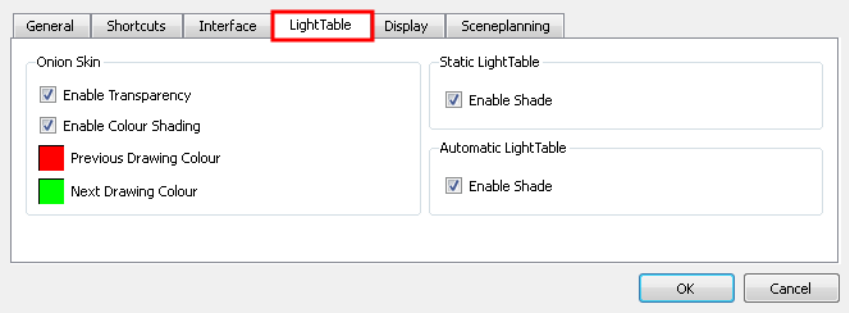
Preferences

When doing traditional digital animation, you work with features and options. You can customize the default behaviour of most tools via the Preferences panel.

To open the Preferences panel:

- Windows: Select **Edit > Preferences**.
- Mac OS X: Select **Toon Boom Studio 8.0 > Preferences**.

You can find the preferences relating to the Onion Skin and Static Light Table features on the Light Table tab of the Preferences panel.



Onion Skin

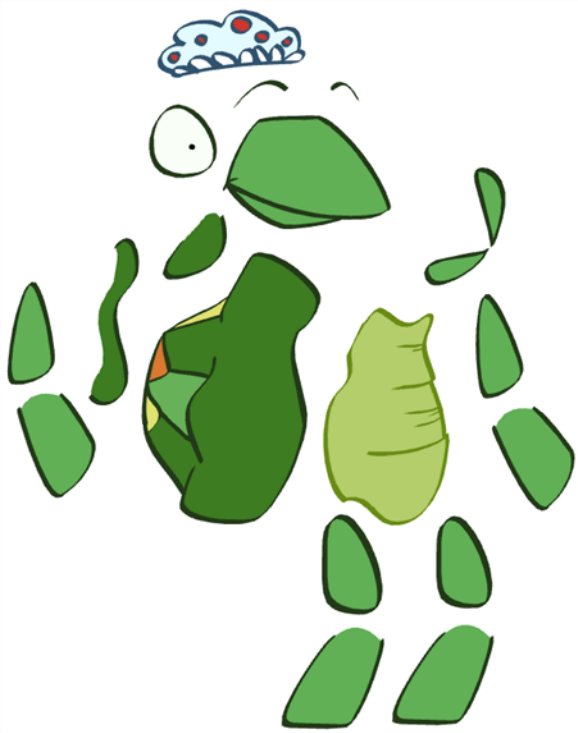
By default the onion skin is displayed as the element's shape in washed-out colours. Green represents the next frames and red represents the previous frames. You can customize the onion skin display.

- **Enable Transparency:** By default the onion skin is displayed with transparency. You can change this behaviour to make the onion skin drawing opaque by deselecting 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 deselect this option to use the current drawing's colours washed-out as the onion skin display.
- **Previous Drawing Colour:** Click 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 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 displays the other drawings as washed-out colours. You can turn off this option to display the other drawings with their real colours.

Chapter 9: Creating a Cut-out Puppet



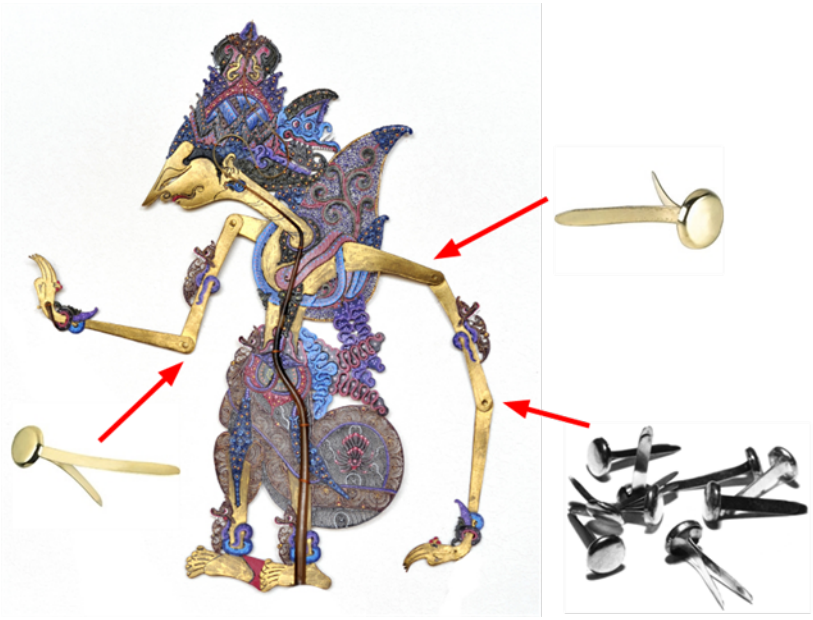
With Toon Boom Studio's extensive set of tools, you can create animated puppets from your drawings or photographs. This technique is known as *cut-out animation* because of the way you move cut-out pieces around instead of drawing.

This chapter is divided as follows:

- About Building a Cut-out Puppet on the next page
- Choosing Your Character on page 259
- Cutting the Character into Pieces on page 261
- Attaching the Pieces on page 267
- Storing the Character in the Library on page 276

About Building a Cut-out Puppet

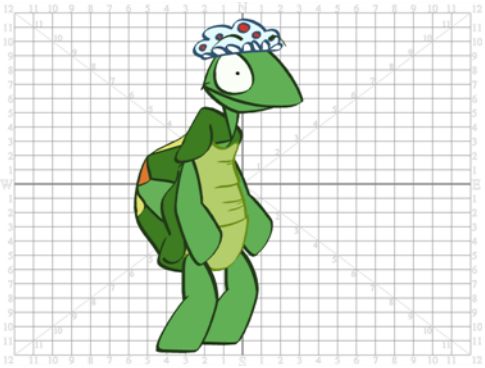
The Toon Boom Studio cut-out puppet principle is very similar to cutting up a character drawn on a sheet of paper and assembling the pieces using little brass fasteners. You create a drawing for each character's body parts and attach them in the Timeline view. Then, you can articulate the character and 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 will not be as much of a challenge for you.

The character we chose for this cut-out demonstration 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:

- Create a template using the Library and import it into your new scene.
- Import a bitmap image.
- Scan a drawing.
- Import a picture, etc.

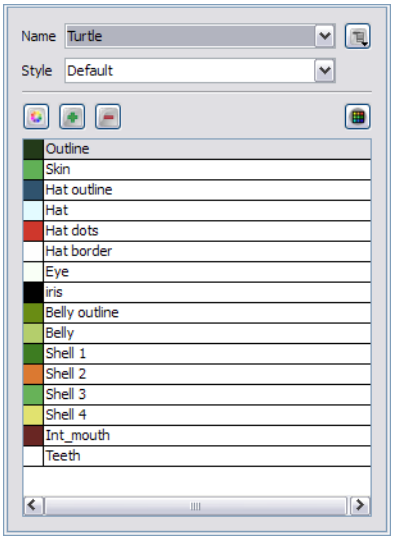
If you import a picture, make sure to import it as a Vector element and not an Image element in order to erase portions and cut pieces.

Related Topics

- Creating and Opening a Project on page 34
- Scanning Images on page 180
- Importing Bitmap Images on page 162
- Library on page 182

Creating a Colour Palette

Once your drawing is imported into your new scene, you need to create a new colour palette for your puppet, unless, of course, you are using a photograph.

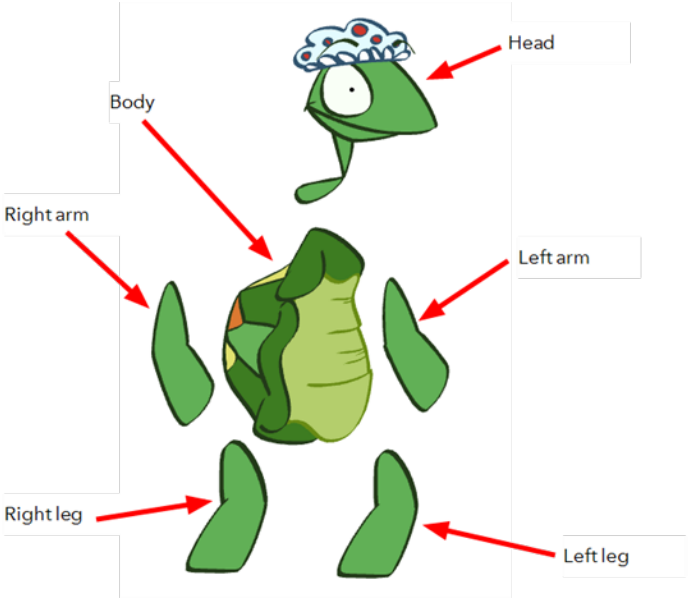


Related Topics

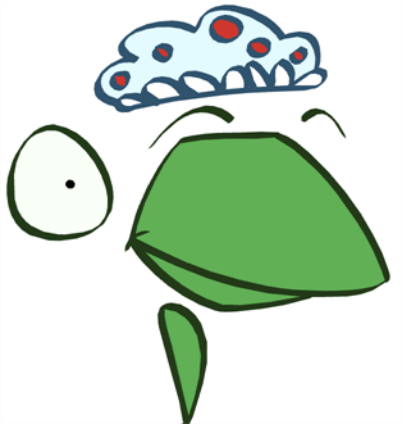
- Palettes on page 152

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. Breaking down the character into six pieces is enough to produce a basic animation.



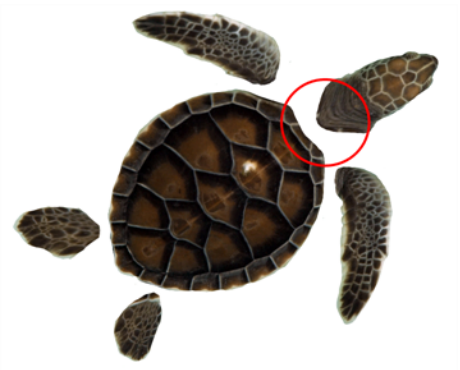
If you like, you can extend the amount of the puppet's articulation. You can bend the arms and legs, and separate the head into several different pieces to animate the eyebrows and make the eyes blink.

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

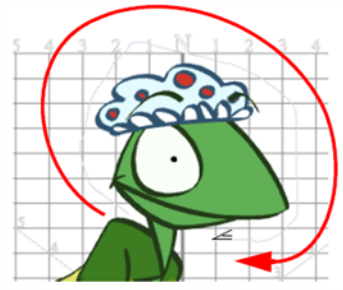
You will now learn about cutting parts of your character and completing any missing areas. If you are using a picture, and because Toon Boom Studio mainly edits vector images, you may want to do this in a bitmap editing software, such as Adobe Photoshop.



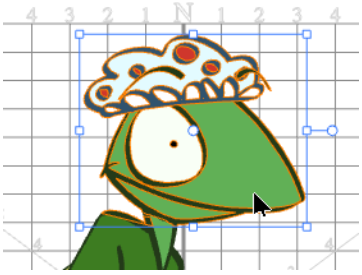
You can use the Show Strokes feature to help you clearly see the region you are cutting using the Cutter tool. To display the strokes, select **View > Show Strokes** or press [K].

To cut your pieces:

1. In the Tools toolbar or in the Drawing Tools toolbar, select the Cutter tool.
2. In the Drawing view, trace a selection around the part to cut.

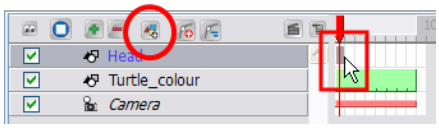


3. In the Tools toolbar or in the Drawing Tools toolbar, select the Drawing Select tool.
4. In the Drawing view, select the cut zone.

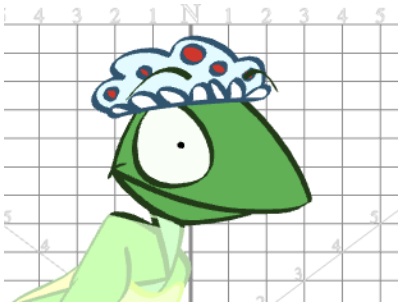


5. Select **Edit > Copy Drawing Object** or press [Ctrl] + [C] (Windows) or [⌘] + [C] (Mac OS X).

6. In the Timeline view, click the Add Drawing Element button and rename the new layer corresponding to the new piece you want to create.

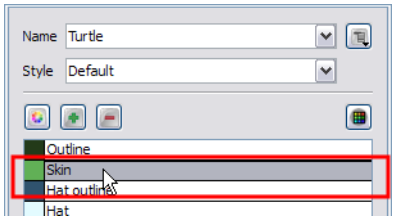


7. On the right side of the Timeline view, select the new layer's first cell.
8. Click the Drawing view, to activate it.
9. Select **Edit > Paste Drawing Object** or press [Ctrl] + [V] (Windows) or [⌘] + [V] (Mac OS X).

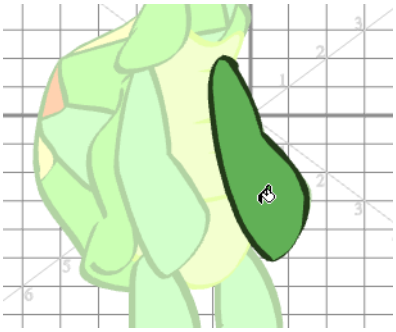


10. In the Tools toolbar, select a drawing tool to clean and complete your new drawing. The Brush and Eraser tools are recommended.
11. In the Onion Skin toolbar (Top toolbar on Mac OS X), click the Light Table button so you can see your original drawing while you draw.
12. In the Drawing view, clean and complete your new drawing. Make sure to draw a complete shape that overlaps the other body parts.

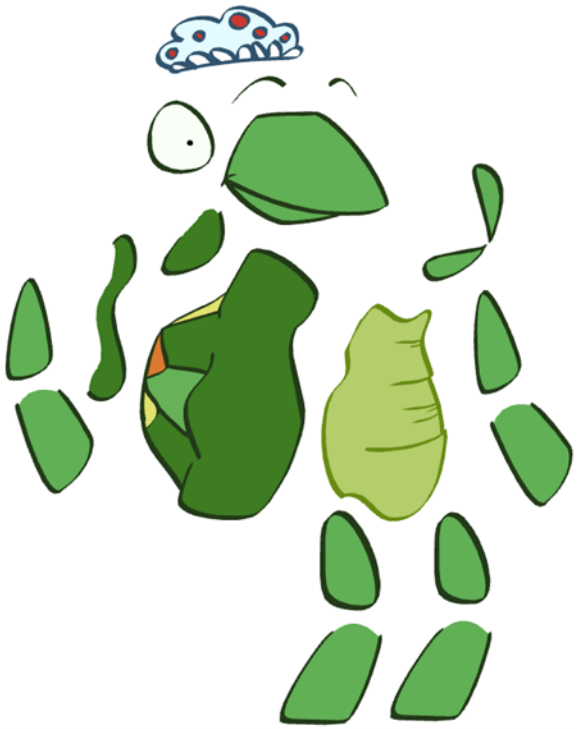
13. In the Tools toolbar, select the Paint tool.
14. In the Colour Palette view, select the colour needed.



15. In the Drawing view, paint your new drawing.



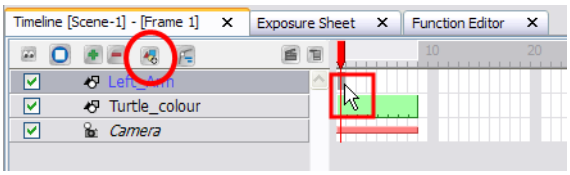
16. Save your project.
17. Repeat the same process for each new piece to create.



Drawing your Pieces

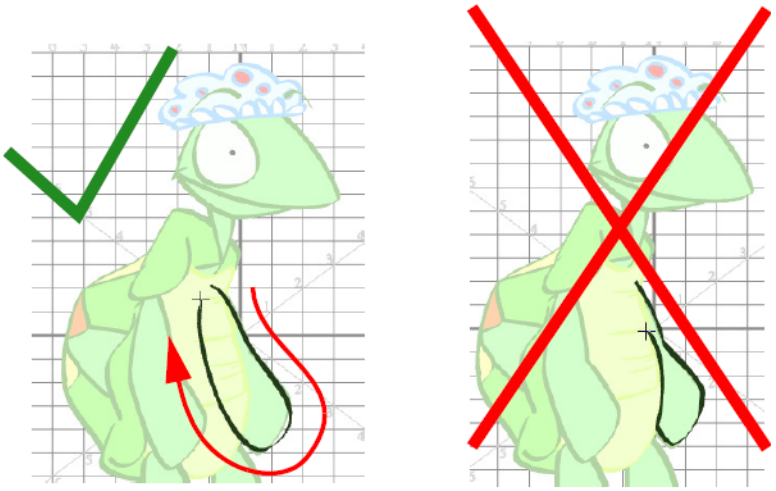
To draw your pieces:

1. In the Timeline view, click the Add Drawing Element button and rename the new layer corresponding to the new piece you want to create.

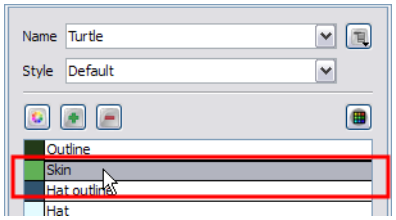


2. On the right side of the Timeline view, select the new layer's first cell.

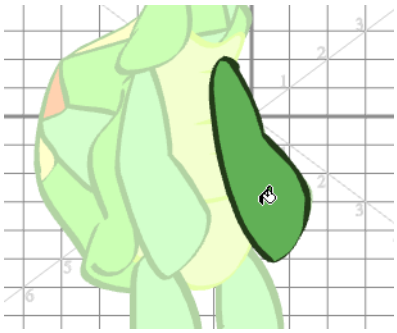
3. In the Drawing Tools toolbar, select the drawing tool of your choice. The Brush tool is recommended.
4. In the Onion Skin toolbar (Top toolbar on Mac OS X), click the Light Table button to see your original drawing while you draw.
5. In the Drawing view, trace the new piece. Make sure to draw a complete shape overlapping with the other body parts.



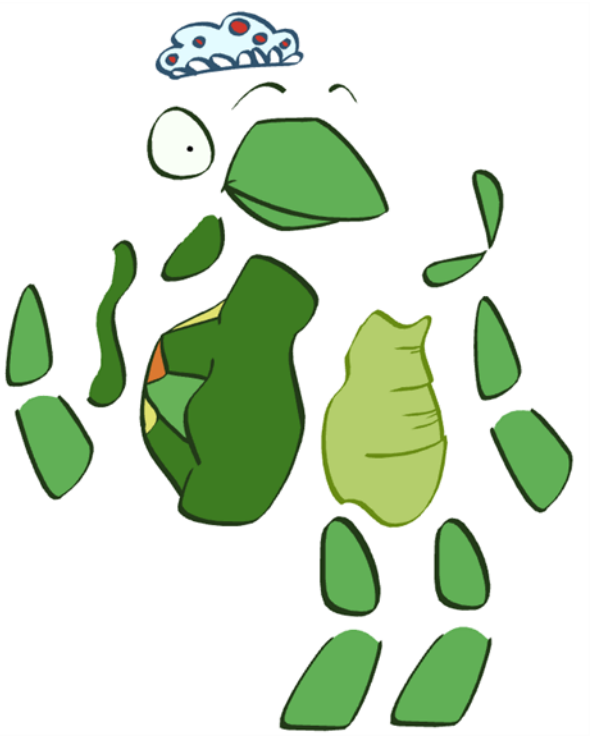
6. In the Tools toolbar, select the Paint tool.
7. In the Colour Palette view, select the colour needed.



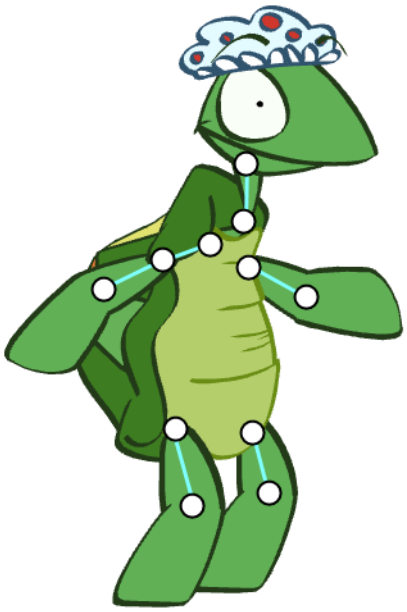
8. In the Drawing view, paint your new drawing.



9. Save your project.
10. Repeat the same process for each new piece to create.



Attaching the Pieces



Once all your pieces are completed, it is 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 to each other in the Timeline view.

This process is divided in the following steps:

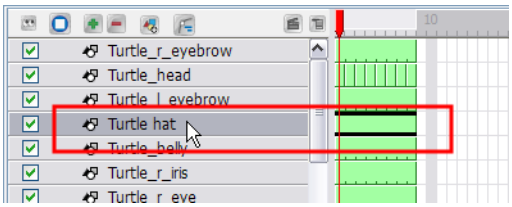
- Ordering Your Layers on the next page
- Attaching the Layers on page 269
- Ordering Parented Layers on page 269
- Adding a Master Peg on page 271
- Setting the Pivots on page 273

Ordering Your Layers

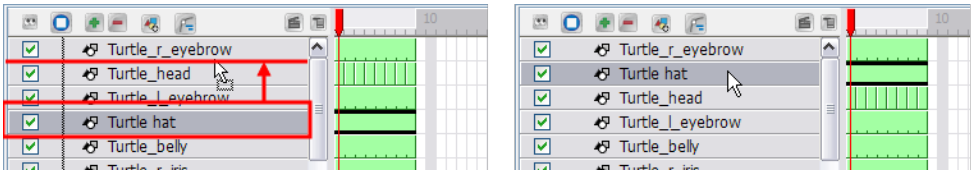
Once you have finished drawing all your pieces, you may find that your drawings need to be reordered. You can place these pieces in the correct order before attaching your pieces to each other.

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, and in this case, you do not want to connect them.

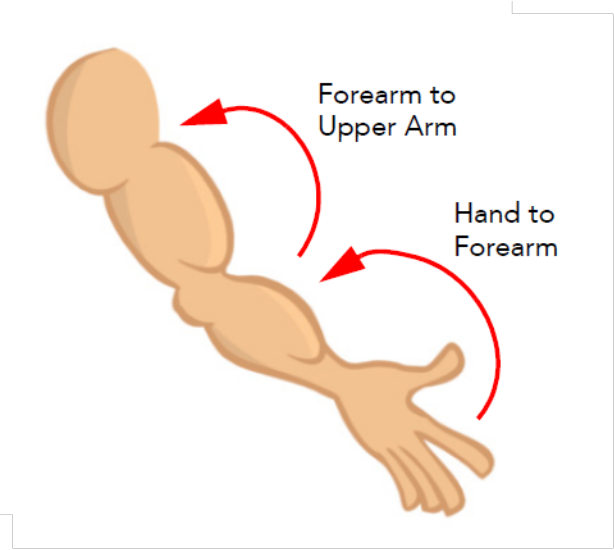


3. Repeat this process until the entire character is in the correct order.

To reorder parented layers, see Ordering Parented Layers on the facing page.

Attaching the Layers

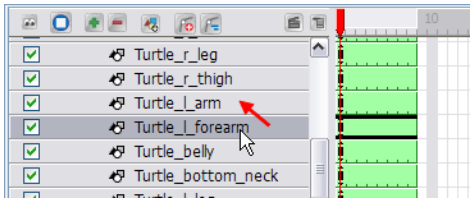
When you animate, you will often want the forearm and hand to follow the upper arm when you select and move it. To do this, you must attach the forearm to the upper arm and the hand to the forearm.



To attach a layer to another one, drag the layers one onto the other in the Timeline view.

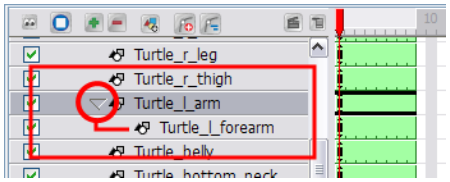
To attach a layer to another one:

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 is pushed to the right.



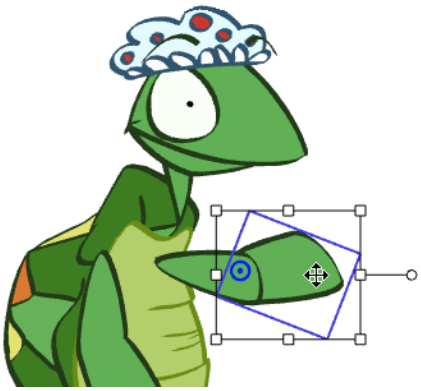
3. Repeat this process until every piece is connected.

Ordering Parented Layers

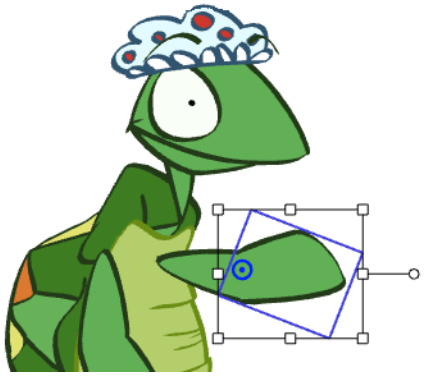
To reorder parented layers:

1. 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, which is explained below.

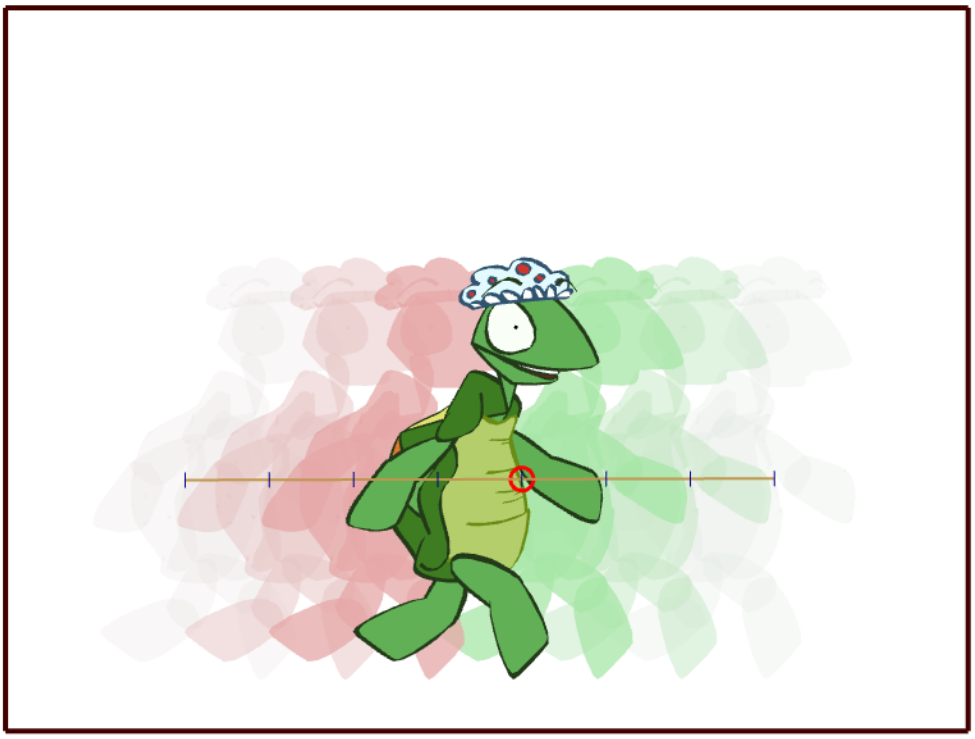
- In the Animation Tools toolbar, select the Transform tool.
- In the Camera view, select the part to bring in front.



- 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.



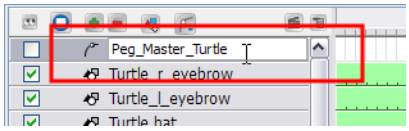
Adding a Master Peg



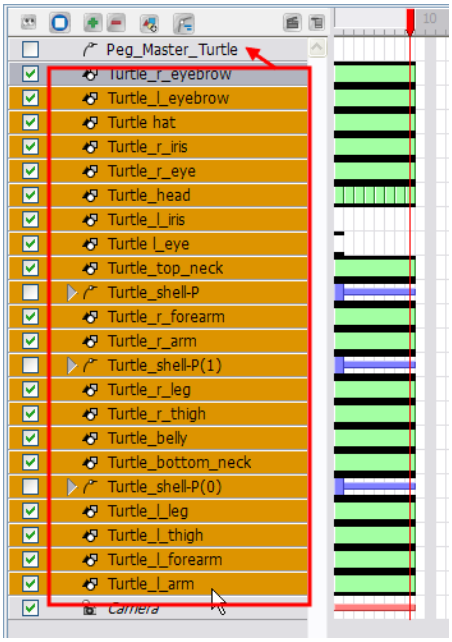
A good element to add to your puppet is a Master Peg. This is a trajectory on which you attach your puppet to make it travel through your scene. t is also used when you want to scale the entire character up or down without doing it on each individual piece. For example, you could animate your puppet 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 the Add Parent Peg button.
2. Double-click the new Peg and name it **`myCharacterName-Peg`**.

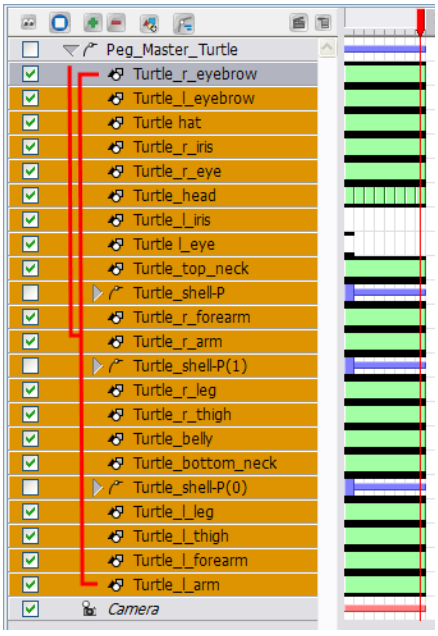


3. In the Timeline view, select all your puppet's layers.

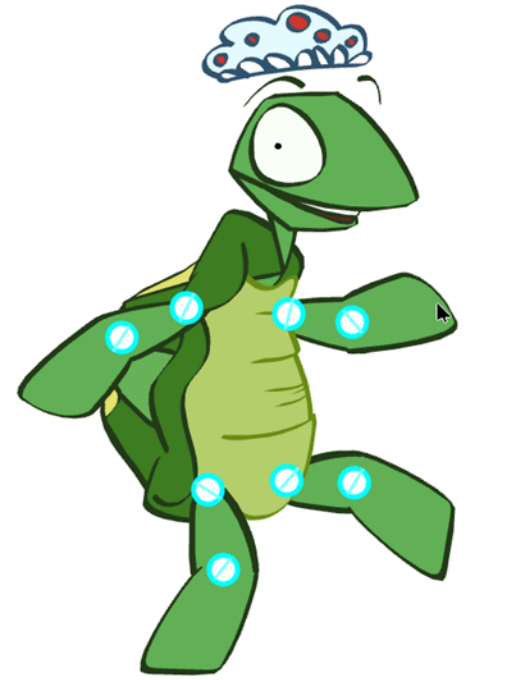


4. Drag the selection ONTO the new peg.

   All the layers are connected to the peg and moved slightly to the right.



Setting the Pivots



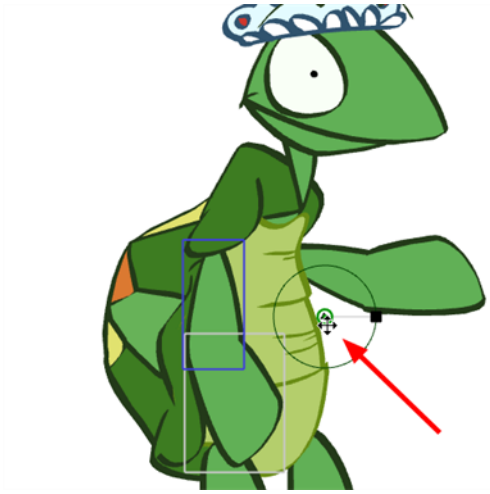
In order for your pieces to rotate properly, it is important to set the pivots at the right location. The pivot is the point from which the body part will rotate; they generally correspond to an articulation. To know where to position a pivot point, think of your own body. If you are moving an arm, notice that your own arm rotates from the shoulder. So, the pivot point for the puppet's arm must 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.

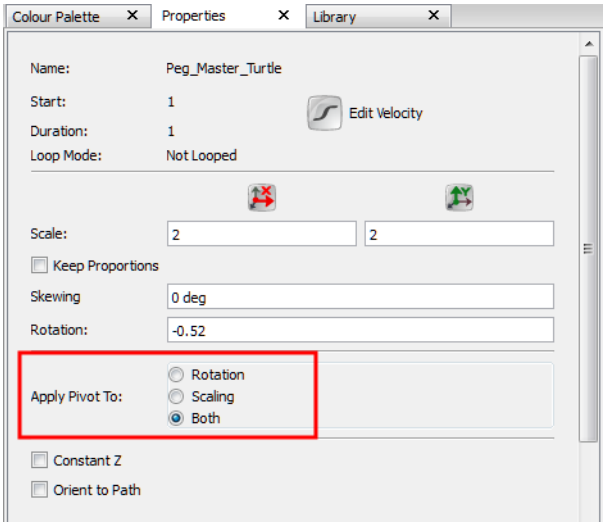
To position the pivots:

1. In the Animation Tools toolbar, select the Rotate tool.
2. In the Timeline or Camera view, select the first layer on which to set the pivot.

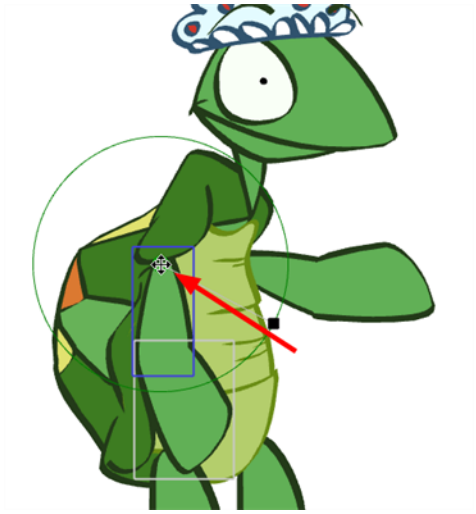
   The green pivot point appears.



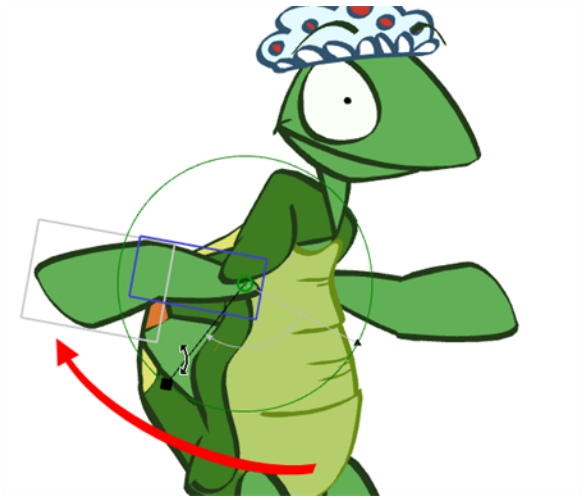
3. In the Properties view, select the **Properties** tab. In the Properties, decide how you want to apply the pivot:
   - **Rotation**: The pivot point applies to rotation only.
   - **Scale**: The pivot point applies to scaling only.
   - **Both**: The pivot point applies to both rotation and scaling.



4. In the Camera view, click the green pivot point and drag it to a new position.



5. In the Camera view, rotate the part to see if the point is well positioned. If not, relocate it.



6. Repeat this 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.

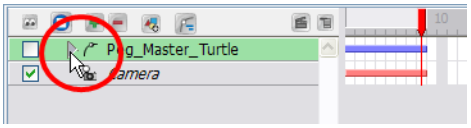
Storing the Character in the Library

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.

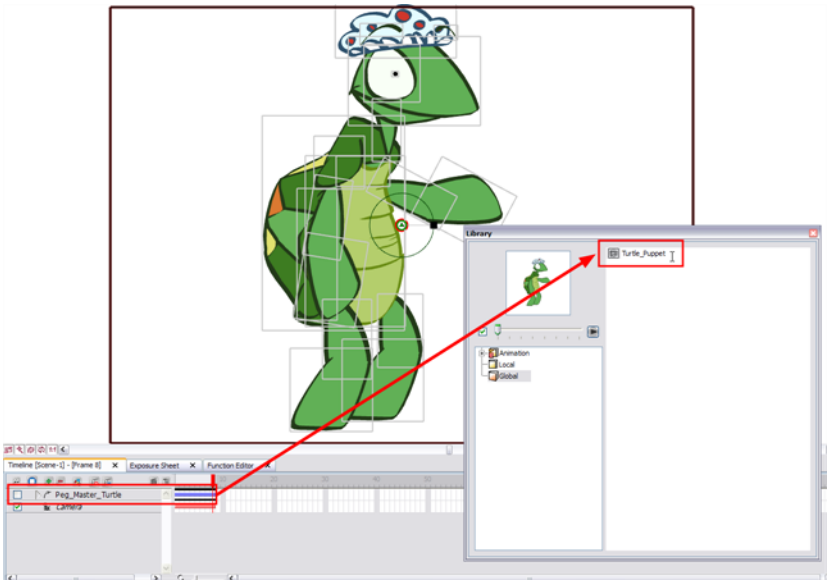
Refer to the Importing Artwork on page 161 chapter to learn more about creating templates and organizing your library.

To store your puppet in the library:

1. In the Timeline view, click 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 the template and rename it with your character's name.
5. Select **File > Save Global Library**.

   Your puppet is completed.

Chapter 10: Setting the Scene

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, background elements, and characters.

In this chapter, you will learn about the following:

- Importing the Scene Elements on the next page
- Ordering the Element Layers on page 279
- Positioning the Scene Elements on page 281
- Cloning and Duplicating Elements on page 285
- Setting the Camera Frame on page 288
- Creating a Multiplane on page 293

Importing the Scene Elements

The first step when building your set is to gather up the scene's elements and import them into your Studio project.

Background, Sound or Movie

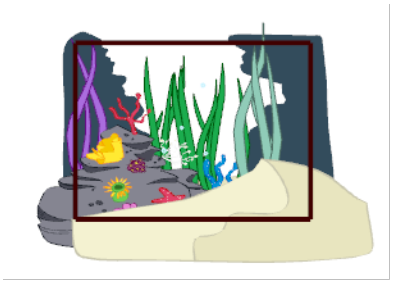
Refer to Importing Artwork on page 161 to learn how to import different types of elements inside your scene.

Refer to Sound and Lip-sync on page 421 to learn how to import sound files.

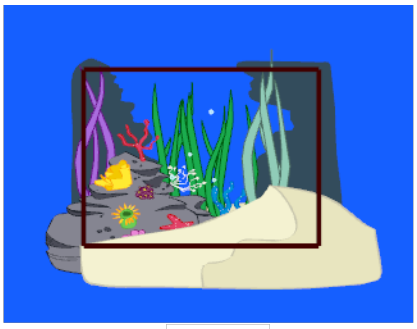
Show Scene Background Colour

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. Refer to Starting Your Project on page 31 to learn how to set the colour of your colour card.



Enabled



Disabled

To enable the Show Scene Background Colour option:

- Select **View > Show Scene Background Colour**.

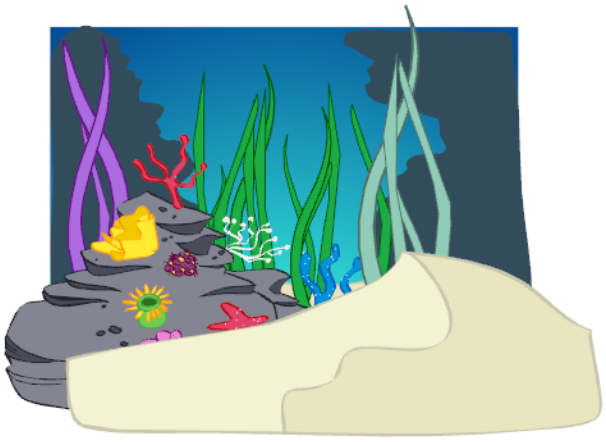
To disable the Show Scene Background Colour option:

- Select **View > Hide Scene Background Colour**.

Templates

Refer to Importing Artwork on page 161 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 Layers in the Timeline View below
- Ordering Layers Using the Arrange Command on the next page
- Ordering Layer Types on the next page

Ordering Layers in the Timeline View

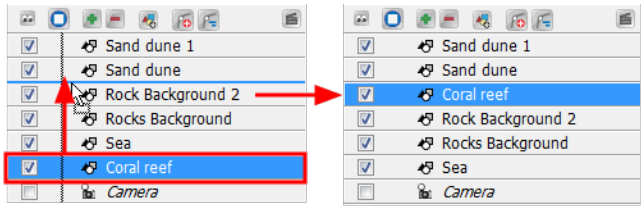
Ordering your layers in Studio is as easy as a drag and drop.

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 all 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 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**: Moves the layer to the top of the Timeline view order. Your element is displayed in front of everything else in the Camera view.
   - **Bring Forward**: Moves the layer one step higher in the Timeline view order. Your element is displayed one level higher in the Camera view.
   - **Send to Back**: Moves the layer to the bottom of the Timeline view order. Your element is displayed behind everything else in the Camera view.
   - **Send Backward**: Moves the layer one step lower in the Timeline view order. Your element is displayed one level lower in the Camera view.

This option will permanently reorder layers in the Timeline view. If you want to reorder the drawing strokes, see Arrange on page 121 or if you want to animate the layer postion over time, see Ordering Your Layers on page 268 and Ordering Parented Layers on page 269.

Ordering Layer Types

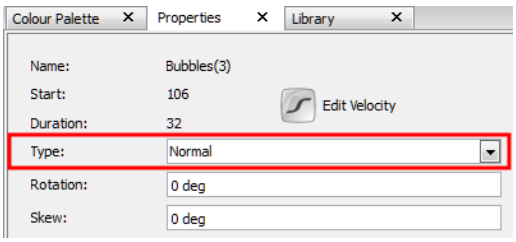
In the Properties view, you can also set a layer ordering type for your elements.

- **Background**: Setting your layer as a Background type layer automatically orders 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 the Normal type layer. A layer set to the Normal type is affected by the ordering level in the Timeline view.
- **Foreground**: Setting your layer as a Foreground type layer automatically places this element in front of all others in the Camera view. When it is set to Foreground, the Timeline ordering has 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. From the Type menu, select a layer type for your element.



Your element is ordered in the Camera view.

Positioning the Scene Elements

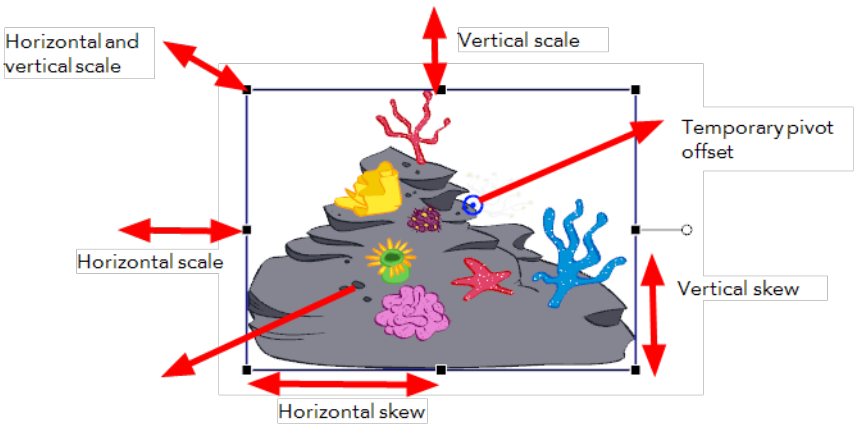
In Studio it is easy to position your elements. You can do this by using the Select tool or the Properties view.

This topic is divided as follow:

- Positioning Elements Using the Select Tool below
- Positioning Elements Using the Properties View below
- Flipping Elements on the next page
- Show Outline Selection on page 283
- Locking Elements on page 283

Positioning Elements Using the Select Tool

Using the Select tool, you can position, scale, rotate, and skew elements directly in the Camera view without creating a keyframe.



To use the Select tool:

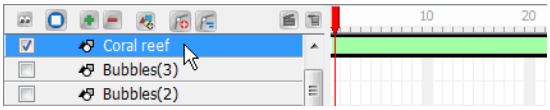
1. In the Animation Tools toolbar, click the **Select** tool, select **Tools > Animation Tools > Select**, or press [6].
2. In the Camera or Timeline view, select the element you want to position.
3. Use one of the bounding box handles to position and transform your element.
   - Hold down the [Shift] 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.

Positioning Elements Using the Properties View

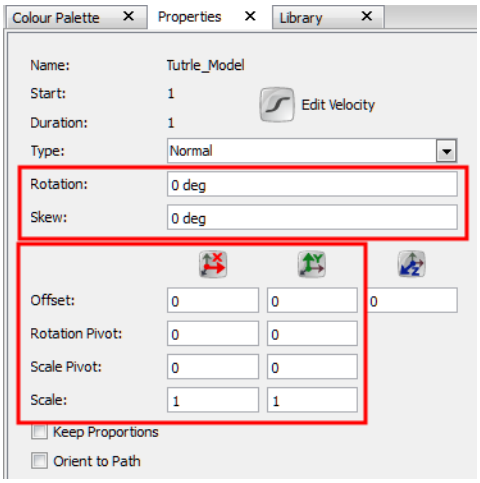
Using the Properties view, you can position, scale, rotate, and skew elements using exact values.

To use the Properties view:

1. In the Timeline view, select the layer of the element you want to position.



The layer is displayed in the Properties view.



2. In the Properties view, set the 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 X and Y values for the position of your element.
   - **Rotation Pivot**: Enter the X and Y values for the position of the Rotation Pivot of your element. This is the central point to which your rotation angle is calculated.
   - **Scale Pivot**: Enter the X and Y values for the position of the Scale Pivot of your element. This is the central point to which the scaling is calculated.
   - **Scale**: Enter the scaling value for the position of your element. 1 = 100%.
   - **Keep Proportions**: Retains the proportions of the original element when scaling it down or up.

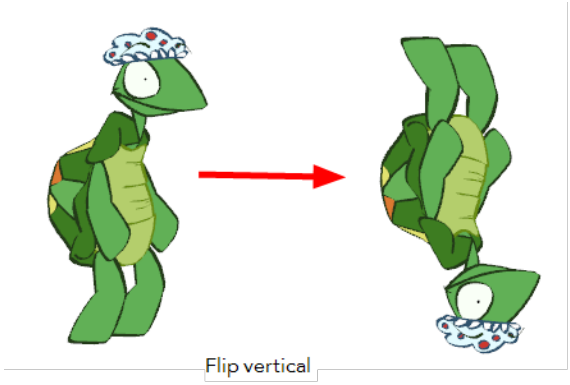
You can change the type of unit that is displayed and used in the Properties view to inches or centimetres instead of the default Field values—see Preferences on page 338.

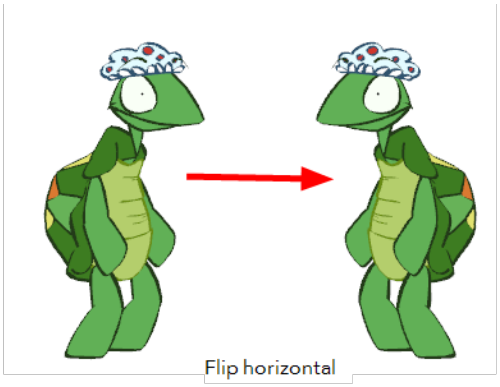
Flipping Elements

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 Flip commands which can produce a horizontal or vertical mirror image of your element.

To flip an element:

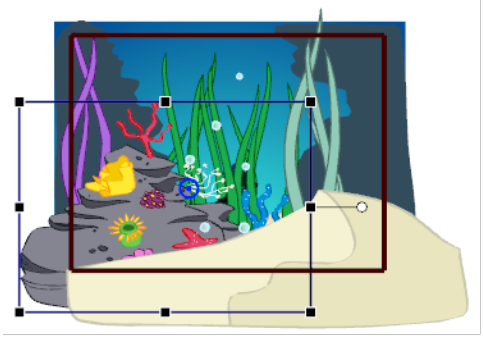
1. In the Camera or Timeline view, select the element you want to flip.
2. Select **Element > Transform > Flip Horizontal** or **Flip Vertical**.

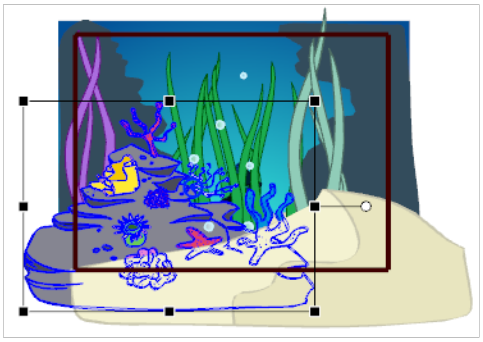




Show Outline Selection

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**.

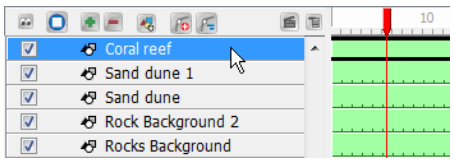
Locking Elements

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 want to lock.

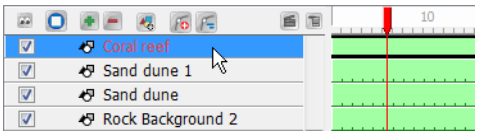


2. In the Timeline View Menu, select **Lock > Lock** or right-click on the selected layer and **Lock > Lock.**

   The name of locked layers appears in red.

To unlock a layer:

1. In the Timeline view, select the locked element you want to unlock.



2. In the Timeline View menu, select **Lock > Unlock** or right-click on the selected layer and **Lock > Unlock.**

Locking and Unlocking All Layers

To lock/unlock all layers:

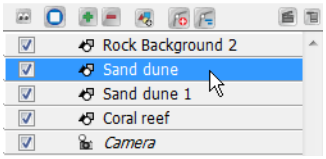
1. In the Timeline view, select a layer.
2. In the Timeline View menu, select **Lock > Lock All** or **Unlock All** or right-click on the selected layer and **Lock > Lock All** or **Unlock All.**

   All layers in the Timeline view are locked or unlocked depending on what you selected.

Locking All Other Layers

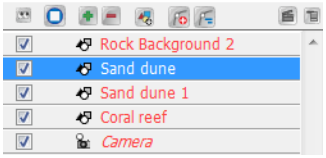
To lock all other layers:

1. In the Timeline view, select the element you want to keep unlocked.

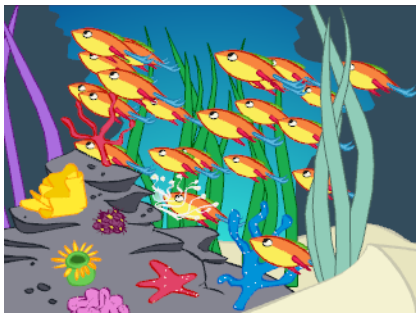


2. In the Timeline View menu, select **Lock > Lock All Others** or right-click on the selected layer and **Lock > Lock All Other.**

   All layers, except the selected one is locked.

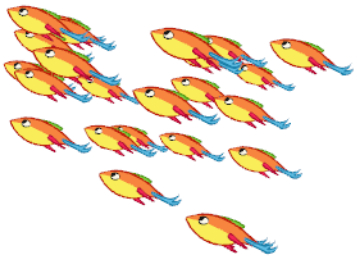


Cloning and Duplicating Elements



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

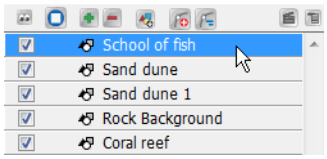


Cloning a layer provides you with a copy of the selected layer that uses the same drawings as the original. If you modify a drawing in the cloned or original layer it is updated in both layers. You can modify the layers' timing independently one from the other, but the drawings remain linked.

This feature is useful when you want to reuse an animation but have different timings.

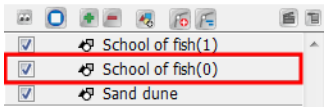
To clone a layer:

1. In the Timeline view or Exposure sheet, click the layer you want to clone.

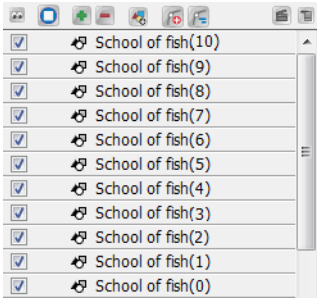


2. In the Timeline View menu, select **Clone Element** or in the top menu **Element > Clone Element** or right-click on the row header and select **Clone Element.**

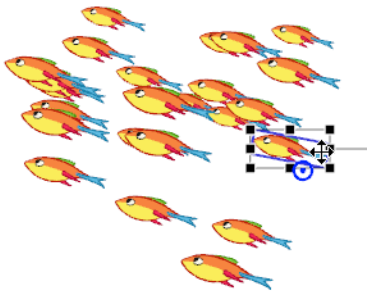
   The cloned layer appears in the Timeline view. In the Camera view, an identical element appears at the same place as the original one.



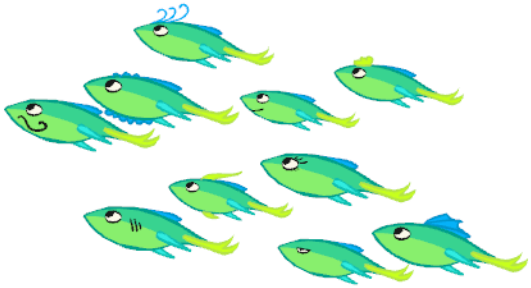
3. Repeat step 2 until you have all the cloned layers you need.



4. In the Camera view, you can reposition and transform your duplicated layers if you need by using the Animation Select tool—see Positioning the Scene Elements on page 281 to learn more about the Animation Select tool.



Duplicating Layers

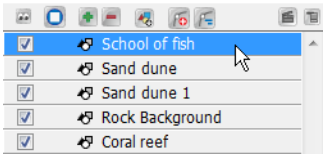


Duplicating a layer provides you with an independent copy of the drawings and their exposure. You can modify anything you want in the duplicated layer without affecting the original one.

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.

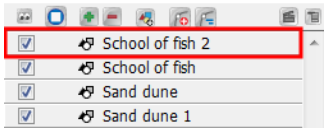
To duplicate a layer:

1. In the Timeline view, click the layer you want to duplicate.

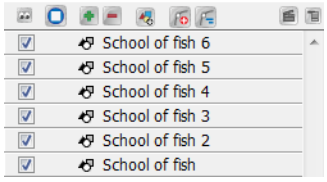


2. In the Timeline View menu, select **Duplicate Element** or in the top menu select **Element > Duplicated Element** or right-click the row header and select **Duplicate Element.**

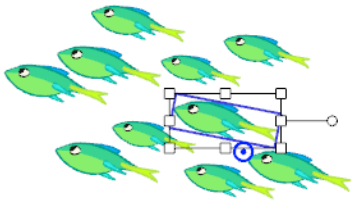
The duplicated layer appears in the Timeline view. In the Camera view, an identical element appears at the same exact place as the original one.



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 by using the Animation Select tool—see Positioning the Scene Elements on page 281 to learn more about the Animation Select tool.



5. In the Drawing view, modify your drawings if needed—see Drawing and Design on page 81 to learn how to draw in Studio.

Refer to Pegs on page 305 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 below
- Choosing the Active Camera Layer on the facing page
- Setting the Camera Frame Position on page 290

Adding a Camera Layer

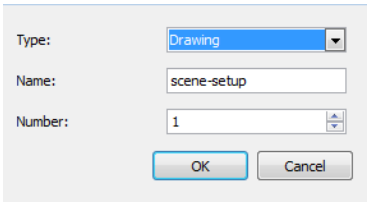
By default, Toon Boom Studio automatically adds a camera to every new project you create, but you can also add your own camera layer if needed.

The default Camera layer cannot be deleted.

To add a Camera layer from the Timeline view:

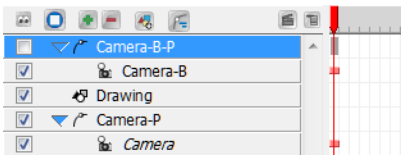
1. In the Timeline view, click the Add Element button.

   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 Toon Boom Studio project appears in this field.
   - In the Number field, type in the number of Camera layers you want to add. You can also use the up and down arrow buttons to change the numbers.
   - Click OK.

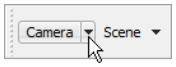
   The new Camera layer appears in the Timeline view.



You can also use the Scene View toolbar (Top toolbar on Mac OS X) to add a new Camera layer to your scene.

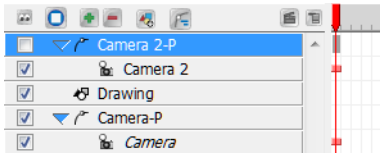
To add a Camera layer from the Scene View toolbar (Top toolbar on Mac OS X):

1. In the Scene View toolbar (Top toolbar on Mac OS X), click the Camera drop-down menu button.



2. Select **Add Camera** from the drop-down menu.

   A new Camera layer appears in the Timeline view.



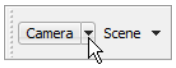
Refer to Discovering the Interface on page 55 to learn how to customize your workspace and display the different toolbars.

Choosing the Active Camera Layer

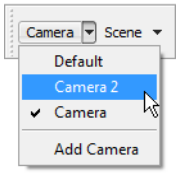
The Camera layer provided in your scene is the active camera by default. If you add several cameras to your scene and want to have different settings on each, you can use the Scene View toolbar (Top toolbar on Mac OS X) camera list to switch from one camera to another. You can use this feature if you are still working on your scene composition and you have different camera setups to choose from. Remember that a peg is automatically attached to the camera.

To select an camera:

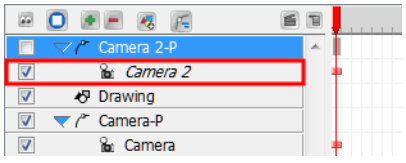
1. In the Scene View toolbar (Top toolbar on Mac OS X), click the Camera drop-down menu button.



2. Select a camera from the menu.



   In the Timeline view, the active Camera layer is displayed in italics.



Refer to Discovering the Interface on page 55 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 Animation Select tool or the Properties view.

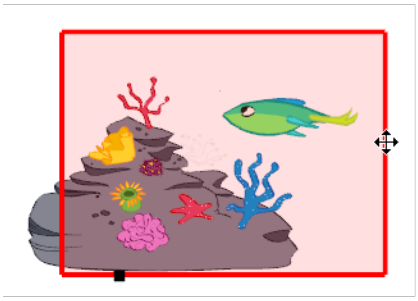
Setting the Frame Using the Select Tool

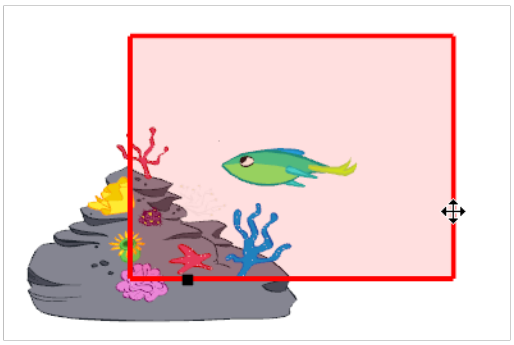
First, you can set the position of the camera frame.

To set up the camera frame using the Select tool:

1. In the Animation Tools toolbar, click the Select tool or select **Tools > Animation Tools > Select** or press [6].
2. In the Camera or Timeline view, select the camera.

   The frame turns red in the Camera view.
3. In the Camera view, grab the camera frame and drag it to the desired position.



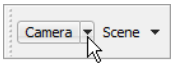


As you position your camera, notice that the camera frame is moving slightly slower than your cursor. This is due to the perspective effect because the Camera is not situated at the same depth level as the elements.

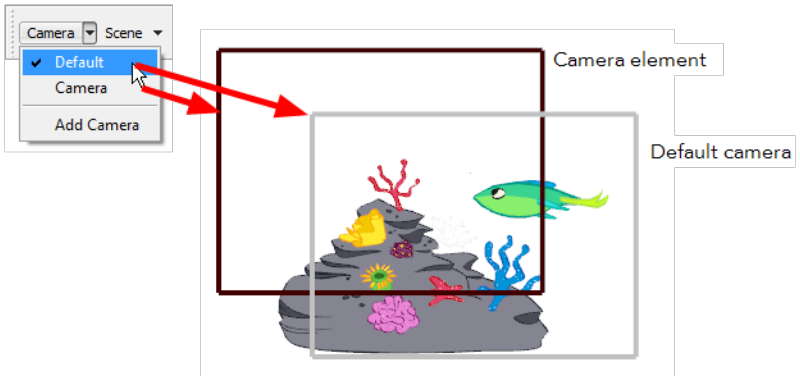
You can set your Active Camera to the Default Camera using the Scene View toolbar (Top toolbar on Mac OS X). This will enable a default camera frame in which you can position your Camera frame without experiencing the perspective illusion. Note that you cannot move the default camera; it is only an indication of the default camera space.

To enable the Default camera:

1. In the Scene View toolbar (Top toolbar on Mac OS X), click the Camera menu button and select **Default**.

   A checkmark identifies the currently active camera in the list.



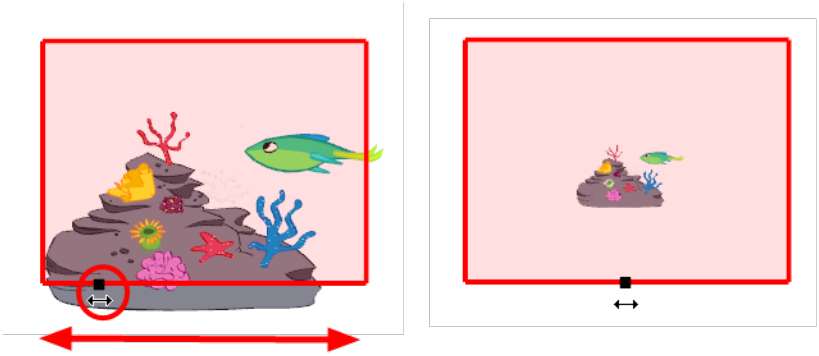
Refer to Discovering the Interface on page 55 to learn how to customize your workspace and display the different toolbars.

You can also set the Field of View, which is also called the Zoom level of the camera frame.

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 at the bottom of the frame and drag it to change the zoom level.



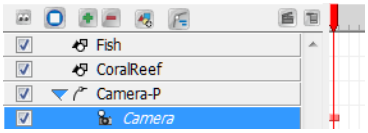
Setting the Frame Using the Properties View

You can also set the camera position and field of view with exact values using the Properties view.

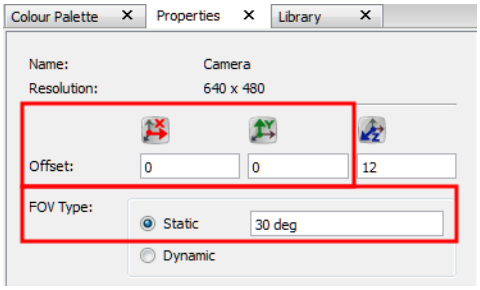
Refer to Discovering the Interface on page 55 to learn how to customize your workspace and display the different toolbars.

To use the Properties view:

1. In the Camera or Timeline view, select your camera.



The Camera information is displayed in the Properties view.



2. In the Properties view, set the desired positioning values:
   - **Offset**: Type in the X and Y position values.
   - **FOV Type:**

     Static: 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—see Animating the Camera on page 320 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—see Preferences on page 338.

Creating a Multiplane

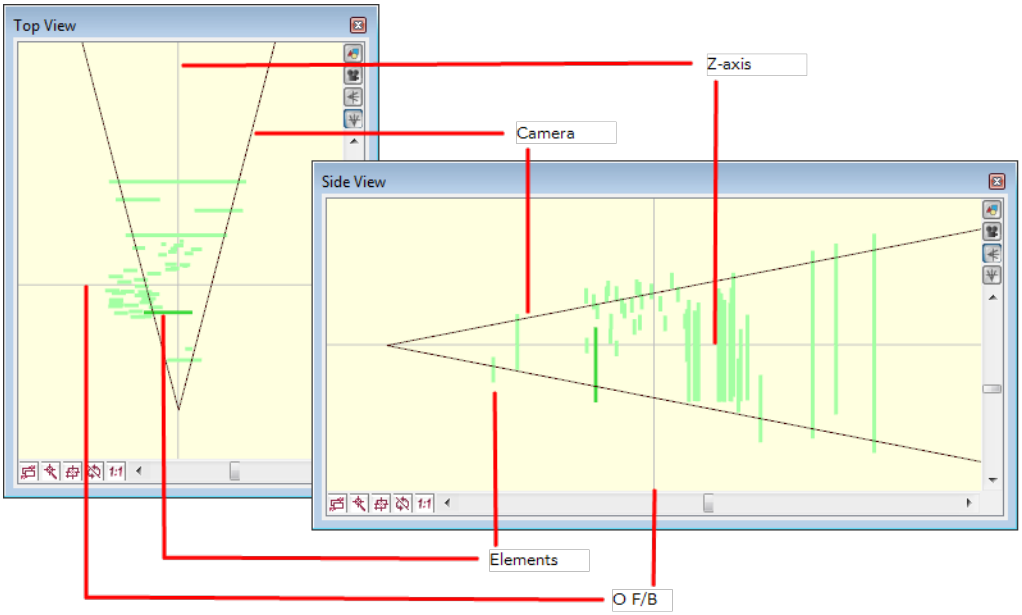
One of the exciting features in Studio is the Multiplane. In the Multiplane you can create backgrounds in several layers and spread them in depth along the Z-axis. This way you add depth to your project, and when you move the camera through this environment, it creates an impressive perspective illusion.

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 the next page
- Camera View on page 296
- Properties View on page 296

Top and Side Views



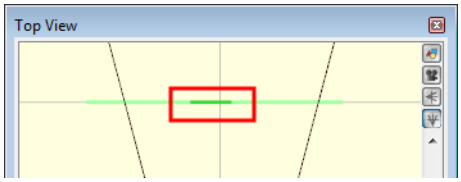
The Top and Side views are representations of your scene's space viewed from the top and side.

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 Animation Select tool.

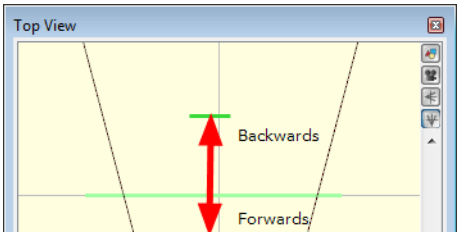
To position elements in the Top view:

1. In the Animation Tools toolbar, select the proper tool:
   - Select the Animation 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 Timeline or Camera view, select the elements you want to reorder.

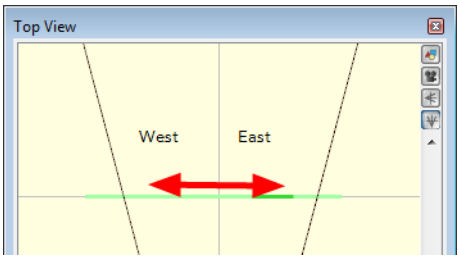
   In the Top view, the selected element is represented by a darker green line.

3. In the Top view, grab your element and drag it to a new position or use the arrow keys:
   - 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).

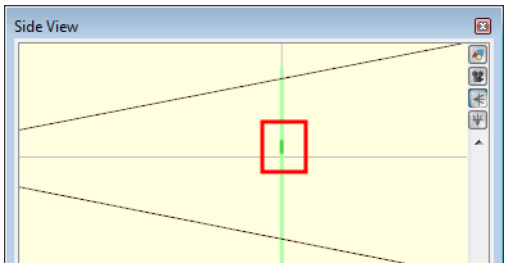


As you position your elements in the Top view, you can see the position update simultaneously in the Camera view.

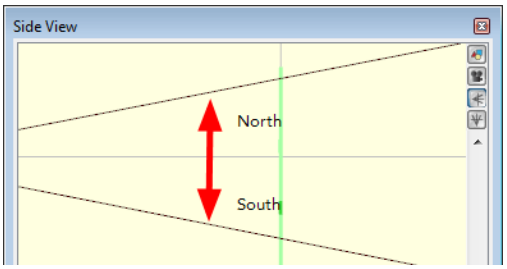
To position elements in the Side view:

1. In the Animation Tools toolbar, select a tool:
   - Select the Animation 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 Timeline or Camera view, select the element you want to reorder.

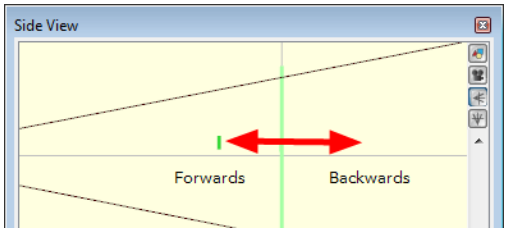
   In the Side view, the selected element is represented by a darker green line.



3. In the Side view, grab your element and drag it to a new position or use your arrow keys:
   - A vertical drag will position it along the Y-axis (North or South).



   - An horizontal drag will position it on the Z-axis (Forward or Backward).



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:

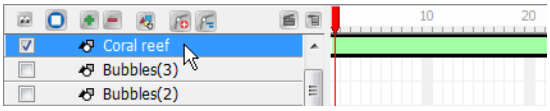
1. In the Animation Tools toolbar, select the proper tool:
   - Select the Animation Select tool if you want to set the static position of your element. The element will be positioned without creating a keyframe.
   - Select the Transform tool if you want to animate the element along the Z-axis, this will create a keyframe.
2. In the Camera view, select the element you want, then to reorder it press and hold the [Alt].
3. Next, press the [Up Arrow] arrow key to nudge the element backward or the [Down Arrow] 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

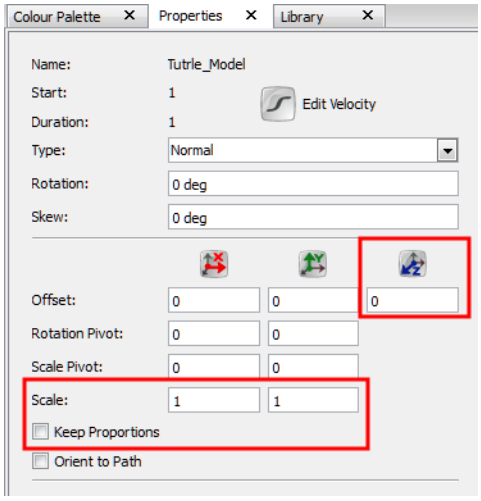
You can use the Properties view to order your elements along the Z-axis using positive and negative values.

To order elements using the Properties view:

1. In the Timeline view, select the layer of the element you want to order.



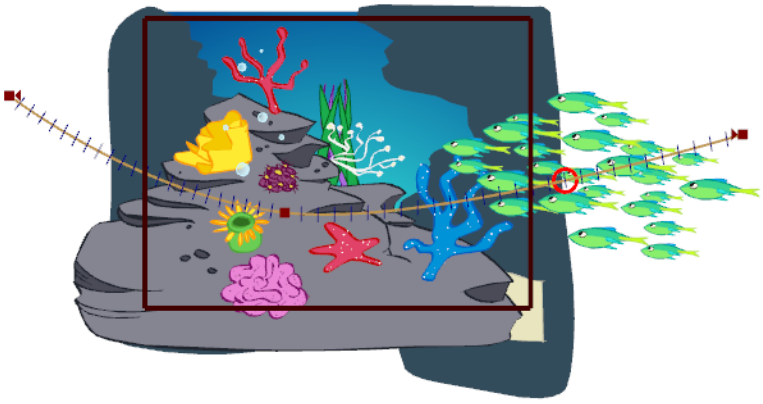
The layer properties are displayed in the Properties view.



2. In the Properties view, set the desired values:
   - **Offset**: Type in a positive or negative value for the Z-axis position.
   - **Scale**: Type in a positive or negative value to resize your element following the Z-axis position of your element.
   - **Keep Proportions**: Retains the ratio, and resizes your element proportionally.

Instead of using the default Field value, you can change of type of unit displayed in the Properties view to inches or centimetres—see Preferences on page 338.

Chapter 11: Creating Motion Paths



Another step in setting your scene is to create a motion path. Once your space and camera frame it set up, you can connect animate objects, instantly create motion, or connect elements to a peg to animate them on a trajectory.

In this topic, you will learn about the following:

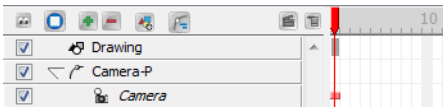
- Animating Objects on a Layer on the next page
- Instant Motion on page 301
- Pegs on page 305
- Motion Path on page 310
- Animating the Camera on page 320
- Function Editor View on page 322
- Other Options on page 330
- Preferences on page 338

Animating Objects on a Layer

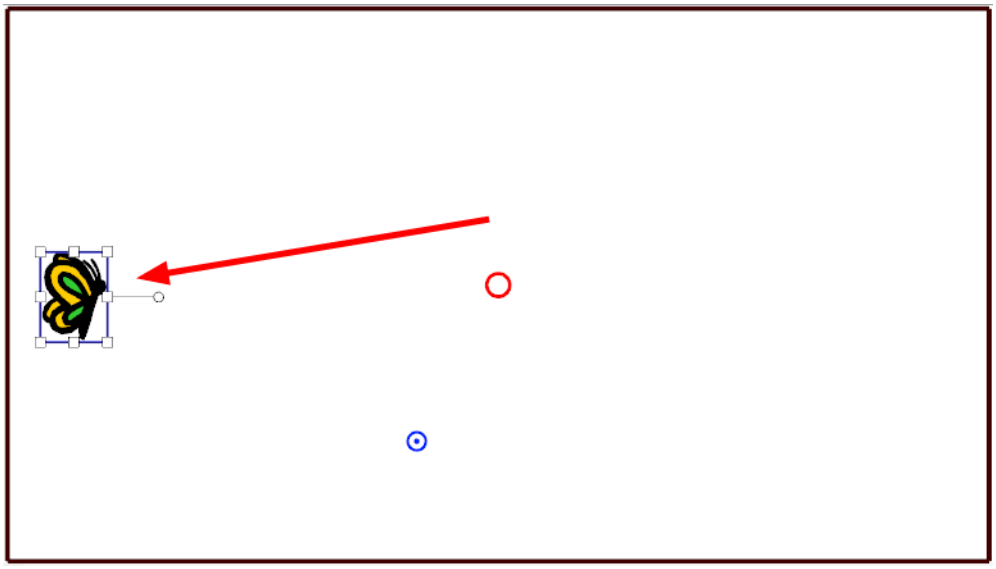
This section describes the basics of animating objects on a layer. Studio's wide range of features let you produce accurate trajectories. However, before reaching this level you must learn how to create a simple motion.

To animate a layer:

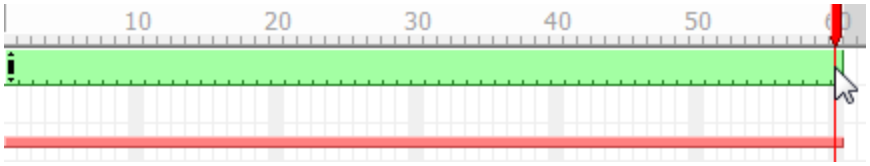
1. In the Animation Tools toolbar, select the Transform tool.
2. In the Timeline view, go to the first frame.



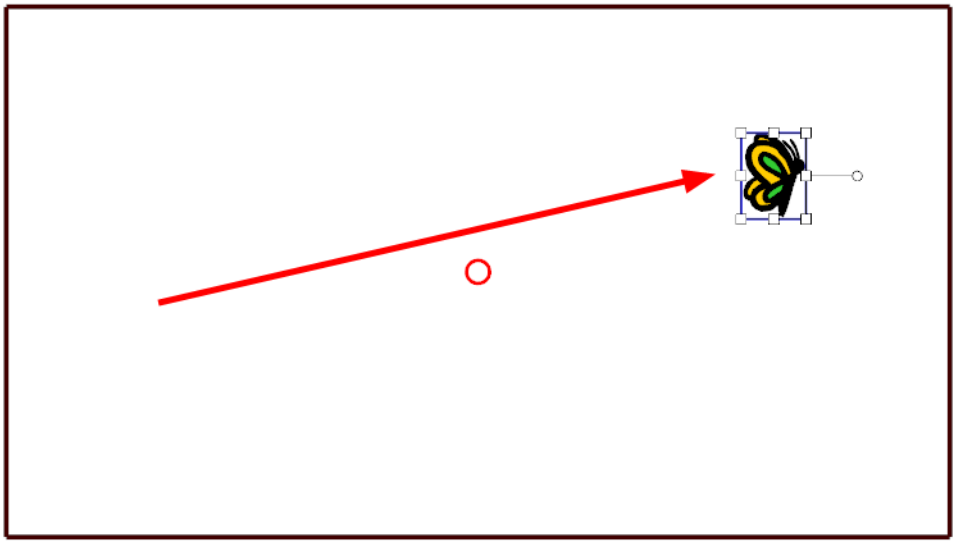
3. In the Camera view, select the element to animate and move it to its first position.



4. In the Timeline view, go to the frame on which you want to set the second position.



5. In the Camera view, move the selected element to its new position.

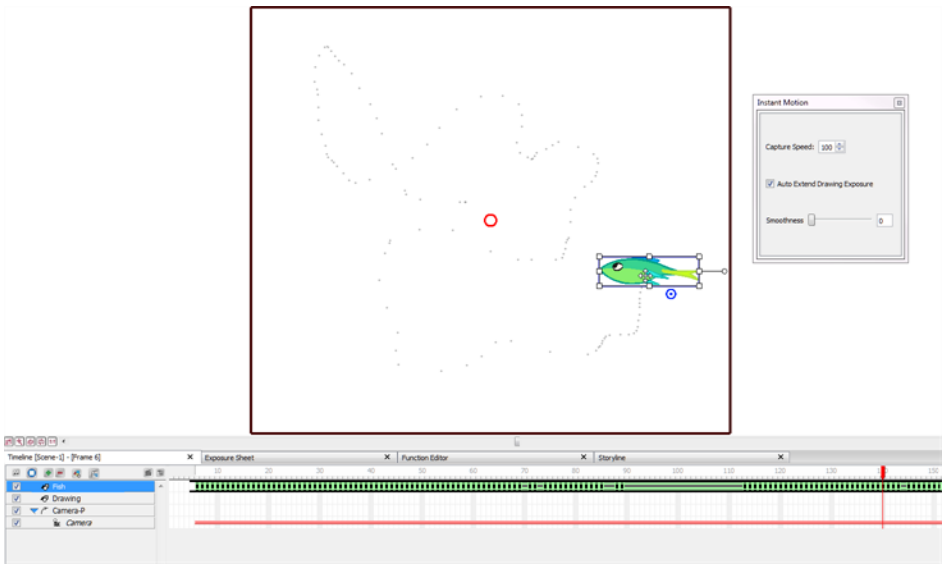


6. In the Playback toolbar, click the Play button to view your animation.

Instant Motion

With Instant Motion, creating animation could not be easier. First, you create a drawing and then you translate, scale, or rotate it. As you manipulate your drawing, small dots are created, representing keyframes. The slower the movement, the more dots are created.

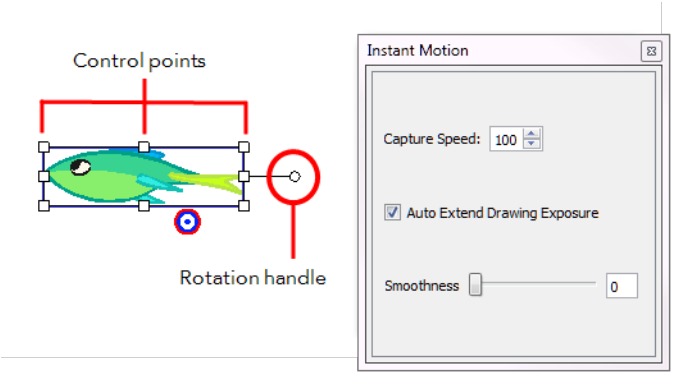
Once you release the pointer, your animation is created. It is represented on the Timeline view as a path. Your animation can be as long or as short as you like. As you continue to move your drawing, by default, the path is automatically extended. You can create more motion paths, one after the other. Each one is automatically added to the end of the last one.



To create instant motion:

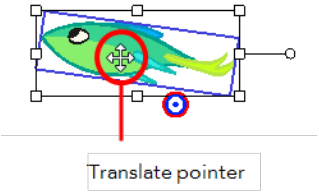
1. Create a drawing—see Drawing and Design on page 81.
2. In the Animation toolbar, click the Instant Motion button.

A bounding box with control points and a rotation handle appear around your drawing, and the Instant Motion box opens.

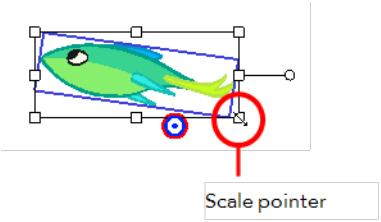


3. Do one of the following to animate your drawing (only one single transformation type is possible per motion recording):

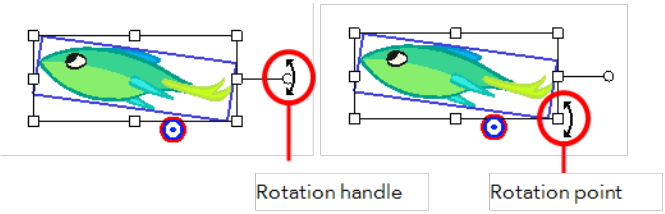
   - **Translate**: To move the drawing, position the pointer over your drawing and drag it to a new location on the screen.



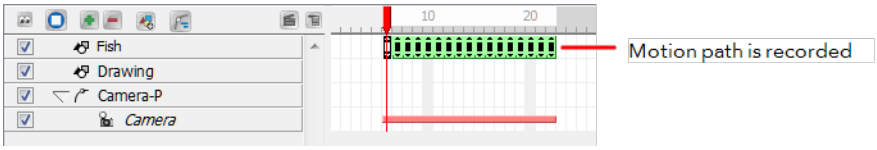
   - **Scale**: Position the pointer at one of the bounding box points, and drag to scale your drawing.



   - **Rotate**: Position the pointer on the rotation handle or rotation point at a corner of your drawing. Drag to rotate the drawing.

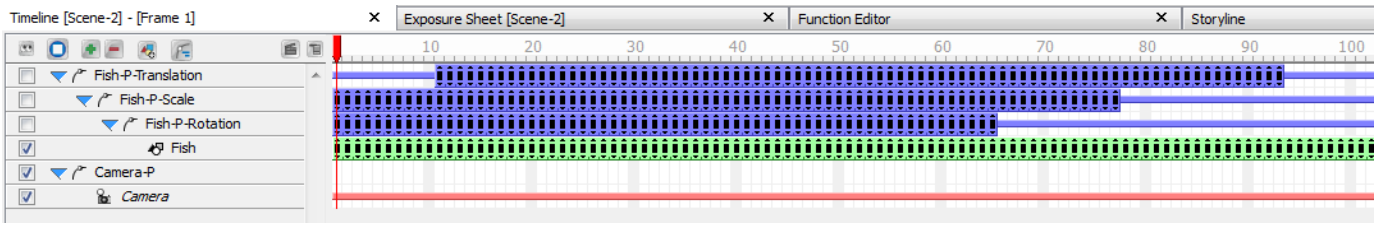


As you translate, scale, or rotate your drawing, small dots are created to represent the keyframes of your animation. When you release the pointer, the speed path of your animation is recorded.



4. Click the **Play** button to view your animation.

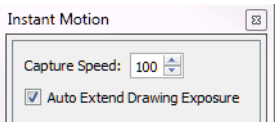
5. If you want to combine different motions such as a rotation and a scale, you can record the motions separately using parented pegs. The first peg can be used for the rotation and the second one for the scale. In the Timeline view, select your drawing layer and click on the Add Parent Peg button to attach a peg to it. Select that peg and move it around with the Instant Motion tool like you did previously for your drawing layer. You can add as many parented pegs as you want to decompose your motions. It is always better to have the main translation (trajectory) as the top parent peg to avoid a conflict with rotation and scaling motion that you affect your entire trajectory rather than the drawing only.



If you want to change a section of your animation once it is recorded, you can move the Timeline playhead to the frame where you want to start overriding the exiting keyframes with a new recording and move your drawing again using the Instant Motion tool.

Instant Motion Properties

The Instant Motion box lets you set the speed at which keyframes are created (the capture speed) and decide if you want to automatically extend the drawing exposure. By default, drawing movements are always recorded.

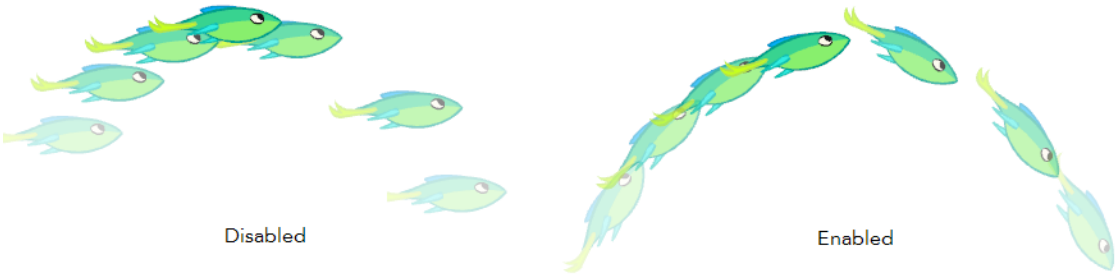


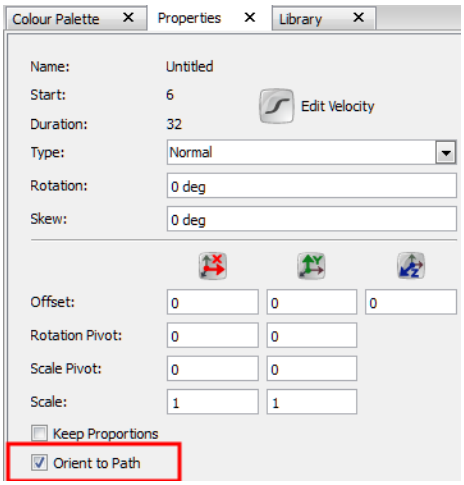
- **Capture Speed**: The speed at which keyframes are created as you manipulate your drawing. The default value is 100. The higher the number, the faster movement recording occurs in the viewer, as indicated by the numbers of dots in the viewer.
- **Auto Extend Drawing Exposure**: By default, this option is on. This option automatically extends the drawing exposure. This means you do not have to extend your existing drawings once the motion is created.
- **Smoothness**: Smooths the movement of the animation. The higher the value, the smooth the motion.

Orienting Animation on a Path

Once you have created your animation, you can orient the drawing to the motion path. The Orient to Path option is available in the 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.





To orient your animation on a path:

1. Create a drawing.
2. Use Instant Motion to create the motion path.
3. In the Properties view, select the **Orient to Path** option.

Make sure to create your animation using Instant Motion before selecting the Orient to Path option.

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:

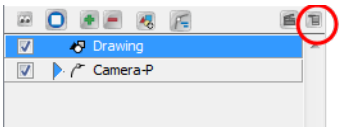
- Adding a Peg below
- Adding a Parent Peg below
- Parenting Elements to a Peg on the next page
- Expanding and Collapsing Layers on page 307
- Peg Only Mode on page 307
- Peg Toolbar on page 308

Adding a Peg

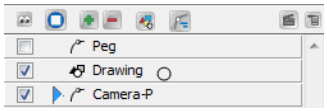
A Peg layer is a trajectory that contains no drawing, onto which you can attach your drawings.

To add a Peg:

1. Do one of the following:
   - In the top menu, select **Element > Add > Peg.**
   - In the Timeline View toolbar, click the **Add New Elements** button and select **Peg** from the dialog window.
   - In the contextual menu in the Timeline view, select **New > Peg.**



The Peg layer appears in the Timeline view, on top of the selected element.

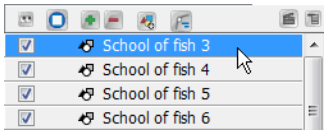


Adding a Parent Peg

Adding a Parent Peg will automatically parent the new peg with the selected element as it is created.

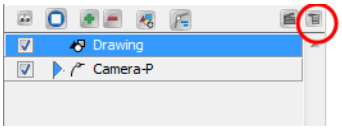
To add a Parent Peg:

1. In the Timeline view, select the element you want to parent to a peg.



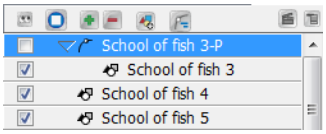
2. Do one of the following:
   - In the top menu, select **Element > Add > Parent Peg.**

- In the contextual menu in the Timeline view, select **New>Parent Peg.**



- In the Timeline View toolbar, select the **Parent Peg** Button.

The Parent Peg layer appears in the Timeline view with the selected element already connected to it.



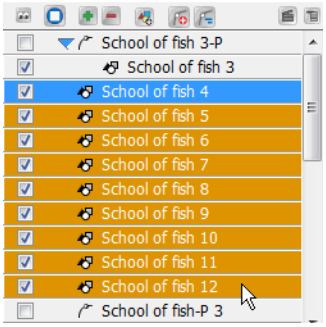
Parenting Elements to a Peg

If you want to connect an element to an existing peg or if you need to connect several layers to a peg at once, here is how you can do it.

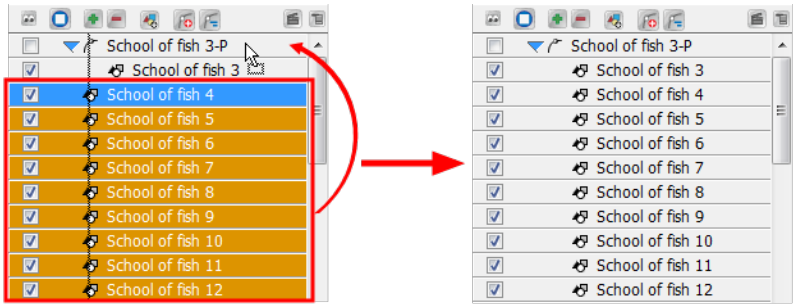
Using the school of fish example in the Cloning and Duplicating Elements on page 285 topic, we'd like to make the fish swim together as a team. To do this, you must parent them all to the same peg.

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.



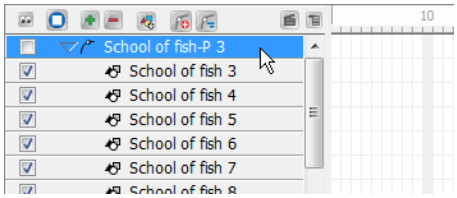
You can also use the Attach to Next Object and Detach from Parent commands to connect and disconnect elements from a peg or from one another—see Other Options on page 330.

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 its children.

To collapse a layer selection in the Timeline view:

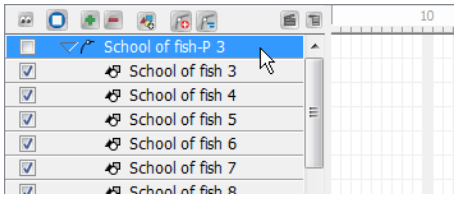
1. In the Timeline view, select the layers to collapse.



2. Select **Arrange > Collapse/Expand** from the contextual menu or click the Expand Children Arrow 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 contextual menu or click the Expand Children Arrow 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** or press [M].

To disable Peg Only Mode:

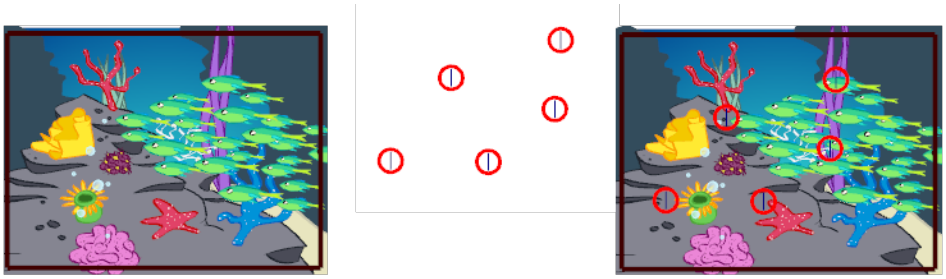
- Select **Tools > Turn Off Peg-Only Mode** or press [M].

Peg Toolbar

The Peg Toolbar provides useful peg display options. In Mac OS X, you may customize your top toolbar to add these buttons—see Customizing Toolbars on Mac OS X on page 73.

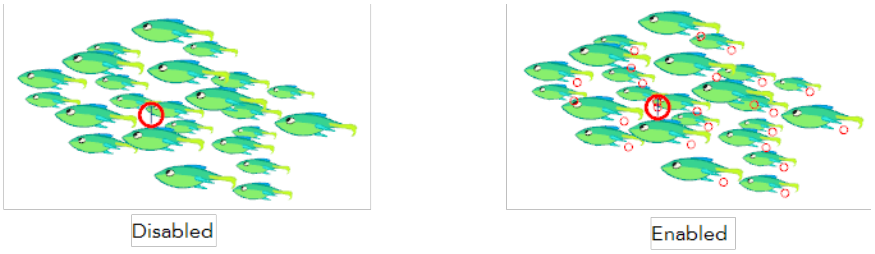
- **Show All Pegs**

  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**.



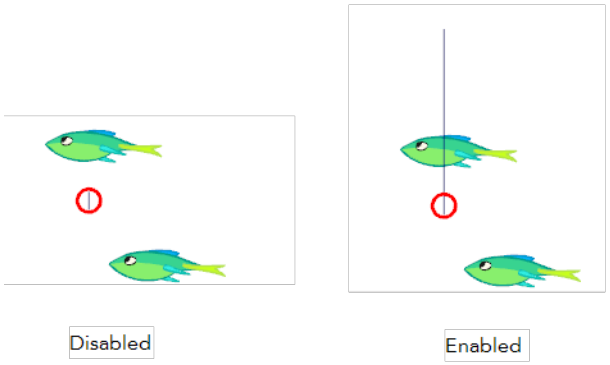
- **Show Peg Ghosts**

  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**

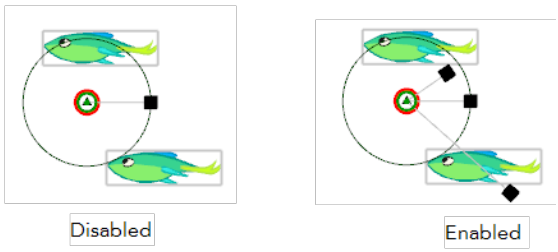
  When you animated a peg pivot, you can display the resulting path in the Camera view.
  You can also select **View > Pegs > Show Pivot Path**.



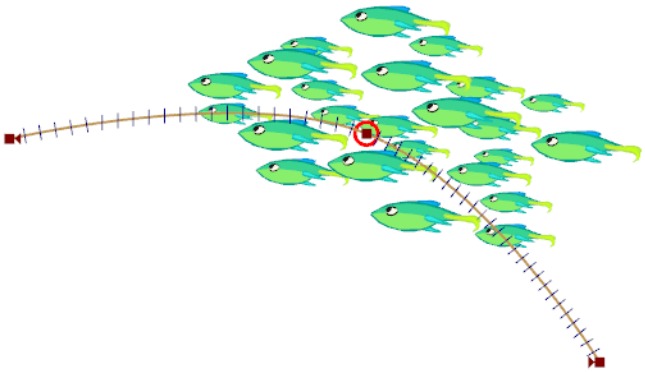
Refer to Function Editor View on page 322 to learn how to animate a peg pivot.

- **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.

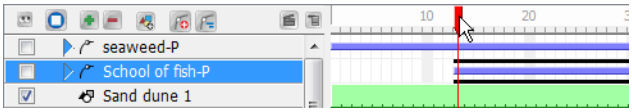
This topic includes the following:

- Creating a Basic Motion Path below
- Displaying and Hiding a Motion Path on page 312
- Adding and Controlling Motion Points on page 312
- Switching between Keyframes and Control Points on page 315
- Adjusting the Tension, Bias and Continuity on page 316
- Previous and Next Control Point on page 317
- Orient to Path on page 318
- Constant Z on page 319
- Snap Last Keyframe on page 319

Creating a Basic Motion Path

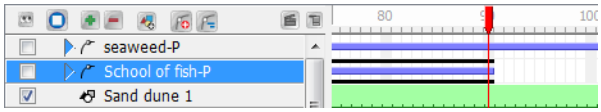
To create a basic motion path:

1. In the Animation 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** or press [M] to turn on the Peg-only mode. This will limit selection in the Camera view to pegs only.
3. In the Timeline view, go to the frame on which you want the motion path to start.

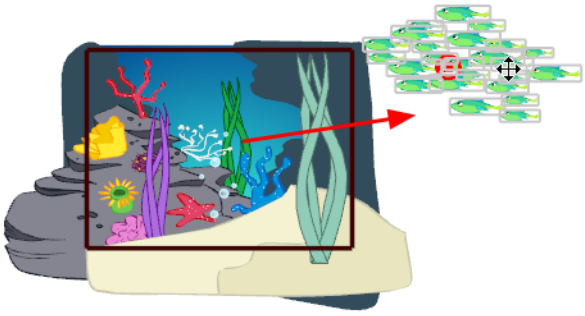


4. In the Camera view, select the elements that you want to follow a motion path. Their parent peg will automatically be selected because of the Peg-only mode.

5. In the Camera view, click and drag your selection to the first position of the motion path trajectory.

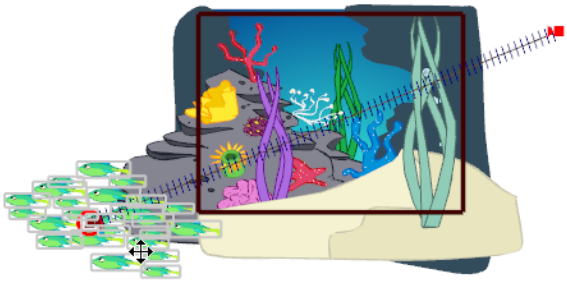


A keyframe is automatically created in the Timeline view. This keyframe is also displayed in the Camera, Top and Side views as a red square with an arrow.



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 appears in the Camera view and a new keyframe is created in the Timeline view.



When you create a motion path with non-constant segments, notice a series of tick marks that represent the position of the element for each frame.

A basic motion path is created and your animation now follows 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—see Function Editor View on page 322.

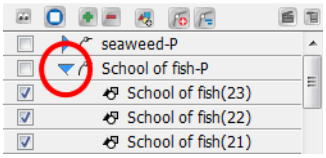
You can set your preferences, so when you create a motion path, a default velocity is automatically applied—see Preferences on page 338.

Displaying and Hiding a Motion Path

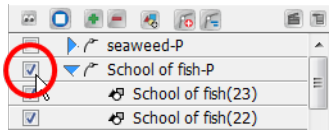
By default, when you select a peg, its motion path is automatically displayed in the Camera view but as soon as you select an element that is not related to this peg, the motion path is hidden. You can enable the peg layer to allow the motion path to be displayed at anytime in the Camera view, even when it is not selected.

To display a motion path:

1. In the Timeline view, click the peg layer arrow button to expand it.



2. In the Timeline view, enable the peg layer.



The motion path is 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

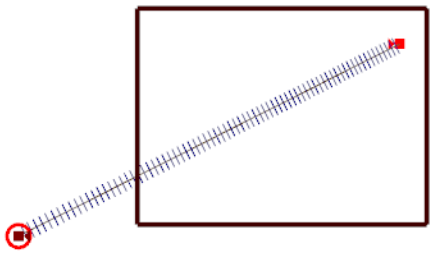
You can create a motion path that is not straight by adding motion points to the trajectory. Motion points can be either keyframes or control points. Keyframes are locked to a specific frame and control points are not.

- 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.

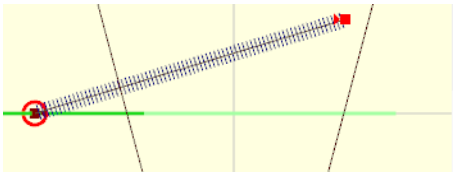
With the Motion tool, you can modify motion paths by adding and moving keyframes on the peg.

When used simultaneously, the Camera, Top and Side views allow you to create motion paths that go from X, Y, or Z.

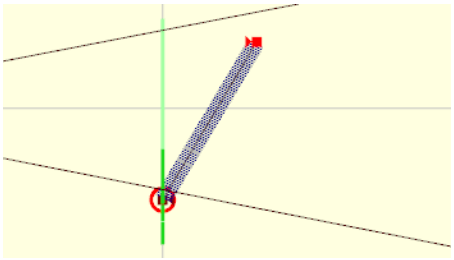
- In the Camera view, you can control the X and Y positions of the motion path.



- In the Top view, you can control the X, Y, and Z positions of the motion path.



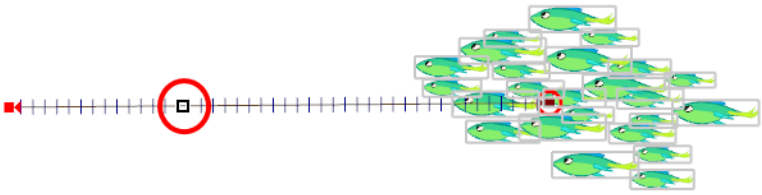
- In the Side view, you can control the Y and Z positions of the motion path.



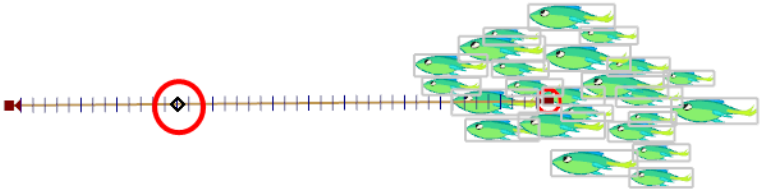
To add motion point:

1. In the Animation Tools toolbar, select the **Motion** tool.
2. 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 these two keys:
   - Hold the [Alt] key and click to add a keyframe. The pointer will change to a black square.

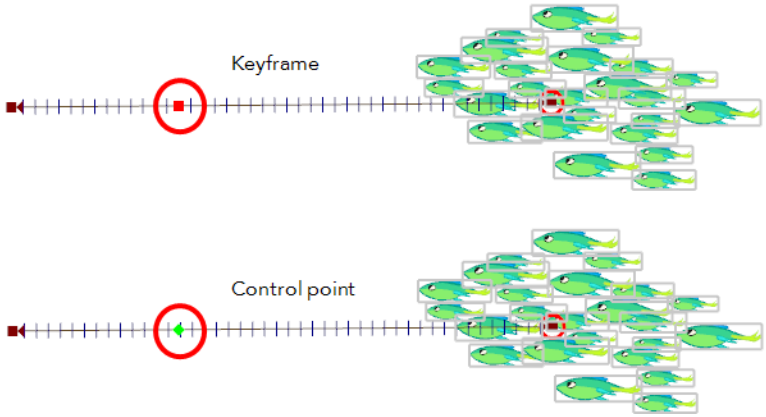


   - Hold the [Shift] key to add a control point. The pointer will change to a black diamond.

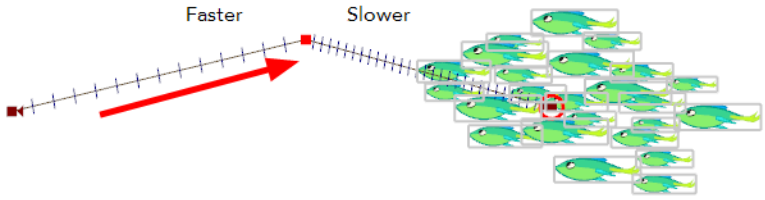


4. In the Camera, Top or Side view, place the black square where you want your motion point to be added and click.

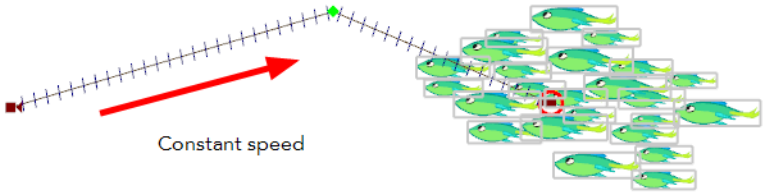
A keyframe or a control point is added exactly at that place.



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.



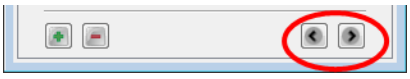
   - The control point is not locked to a specific frame. Repositioning the new control point will not affect the speed of the two segment, it will remain constant throughout the motion path.



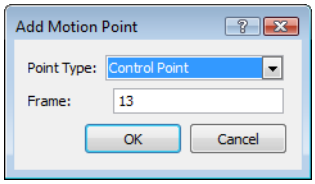
6. To delete a control point, select it from the motion path and press [Del].

To add and remove control points from the Properties view:

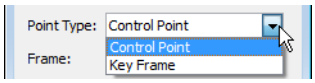
1. In the Animation Tools toolbar, select the Motion tool.
2. In the Timeline view, select the motion path peg to display it in the Camera view.
3. In the Camera view, select one of the control points on your motion path.
   The control point properties are displayed in the Properties view.
4. In the 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.

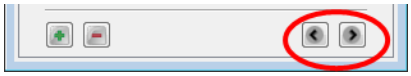


6. In the Frame field, enter the frame number where you want the new motion point to be added.

7. Click OK.

   The new motion point is added to your motion path.

8. To delete a selected motion point using the Properties view, click **Delete**.



   You can also modify the velocity between the different control points using the Function Editor view—see Function Editor View on page 322.

Switching between Keyframes and Control Points

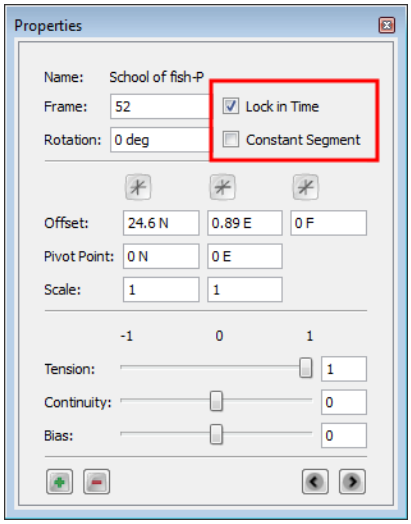
You can easily switch from a keyframe to a control point or the opposite using the Properties view.

To switch between keyframe and control point using the Properties view:

1. In the Animation 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. Select or deselect 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.

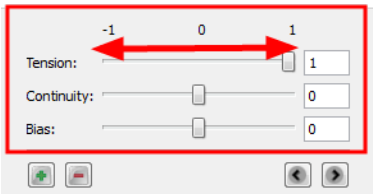
5. You can also enable or disable the **Constant Segment** option:
   - By default, the Constant Segment is disabled because Studio automatically creates non-constant segments between keyframes. Enable it to turn your segment to a constant segment.
   - If the motion point you selected precedes a constant segment, the option will be enabled. Disable it to change your segment to a non-constant segment.

Refer to the Animating a Puppet on page 395 chapter to learn more about keyframes and constant vs. non-constant segments.

Adjusting the Tension, Bias and Continuity

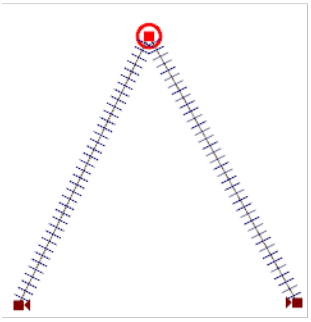
You can use the Tool Properties view to edit keyframes and control point parameters such as position, continuity, bias, tension and lock in time.

Each time a Keyframe or a Control Point is selected in the Camera, Top or Side view, its parameters appear in the Properties view.

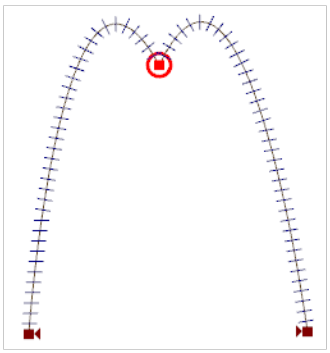


You can adjust these parameters on existing Control Points and Keyframes by selecting the point in the Camera View with the Motion tool and using the Continuity, Tension and Bias sliders in the Properties view.

- **Continuity**: Controls the smoothness of a transition between the segments joined by a point.

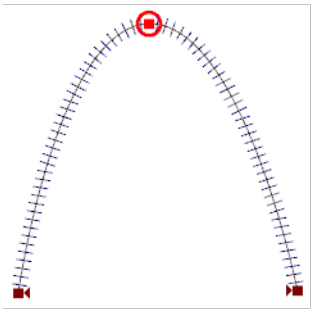


A Continuity of -1 sharpens the transition on both sides of the control point.

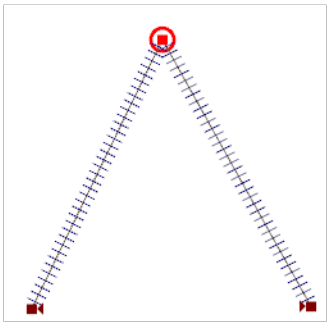


A Continuity of +1 rounds out the transition, creating gentle curves on both sides of the control point.

- **Tension**: Controls how sharply the path bends as it passes through a control point or keyframe.

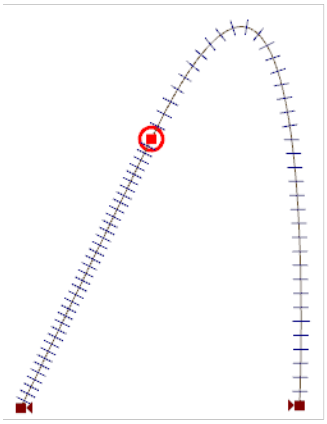


A Tension of -1 increases the curve on both sides of the control point.

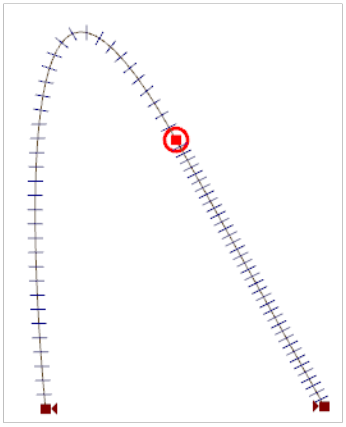


A Tension of +1 sharpens the curve both sides of the control point.

- **Bias**: 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 on page 338 topic to learn how to set your preferences.

Previous and Next Control Point

In Studio, there are shortcuts and options available for navigating between control points on a motion path.

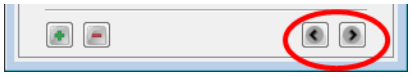
To navigate between control points using shortcuts and menu option:

1. In the Animation 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** or press [,].
   - To go to the next control point, select **Element > Arrange > Next Control Point** or press [.].

To navigate between control points using the Properties view:

1. In the Animation 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.

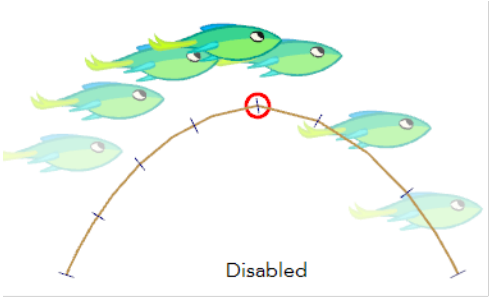
   The control point properties are displayed in the Properties view.
4. In the bottom of the Properties view, click on the Previous and Next buttons to navigate through the control points.

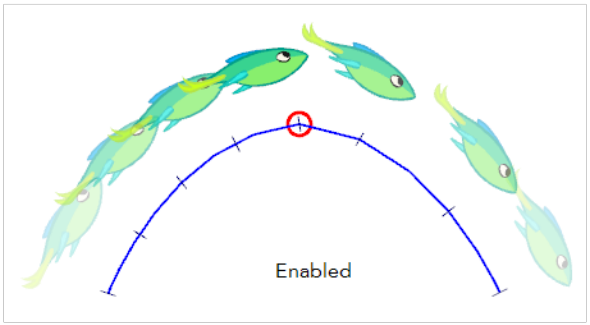


Orient to Path

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.

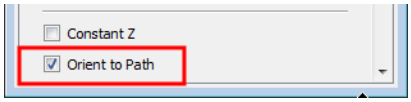




To enable the Orient to Path option:

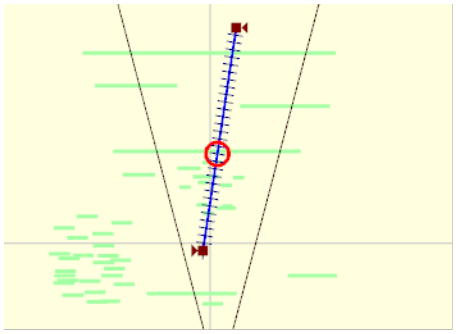
1. In the Timeline view, select the parent peg of the element you want to follow the motion path.

   The properties of the selected peg are displayed in the Properties view.
2. In the Properties view, select the **Orient to Path** option.

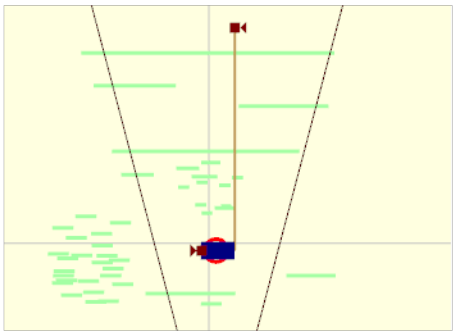


Constant Z

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.



Disabled

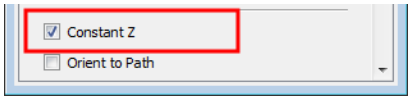


Enabled

To enable the Constant Z option:

1. In the Timeline view, select the peg on which you want to enable the constant Z option.

   The properties of the selected peg appear in the Properties view.
2. In the Properties view, select the **Constant Z** option.



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 Studio, a peg is automatically added on a camera. This lets you 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.

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 below
- Making a Basic Camera Move below

Adding a Peg to Your Camera

If your camera layer is not attached to a peg, you can manually add one.

To add a parent peg to your camera:

1. In the Timeline view, select the Camera layer.
2. From the top menu, select **Element > Add > Parent Peg**.

   A Peg layer appears directly above the Camera layer and the Camera layer is automatically attached to it. The Peg layer automatically takes 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

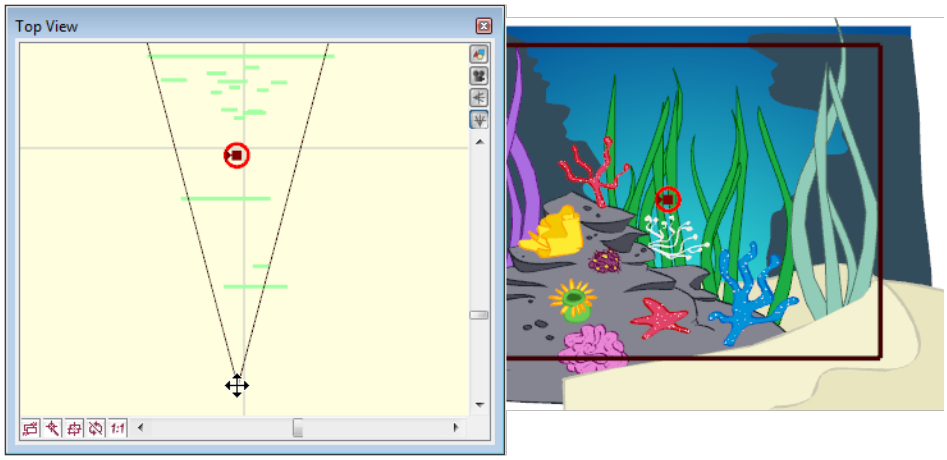
Because a peg is automatically added on a camera, you are ready to animate your camera.

To animate your camera:

1. In the Animation Tools toolbar, select the Motion tool.

2. In the Timeline view, select the camera peg layer on the first frame where you want your camera motion to start. It can be the first frame of the scene or any other frame.

3. Right-click and select **Add Keyframe** or press [I].
4. 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.

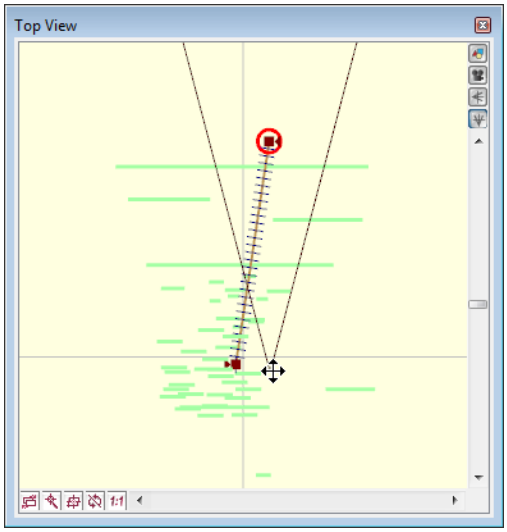


5. In the Timeline view, click on a cell in the Camera Peg layer where you want the camera move to end.

6. Right-click and select **Add Keyframe** or press [I].

   A keyframe appears in that cell.

7. 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 Studio created a non-constant segment, meaning that it will automatically interpolate the movement.

Related Topics

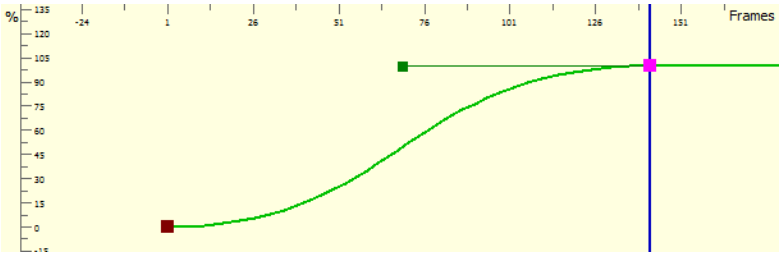
- Setting the Camera Frame on page 288
- Creating a Basic Motion Path on page 310

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.

If the scene is 60 frames, but the motion path ends at frame 40, then the editor will only display up to frame 40.

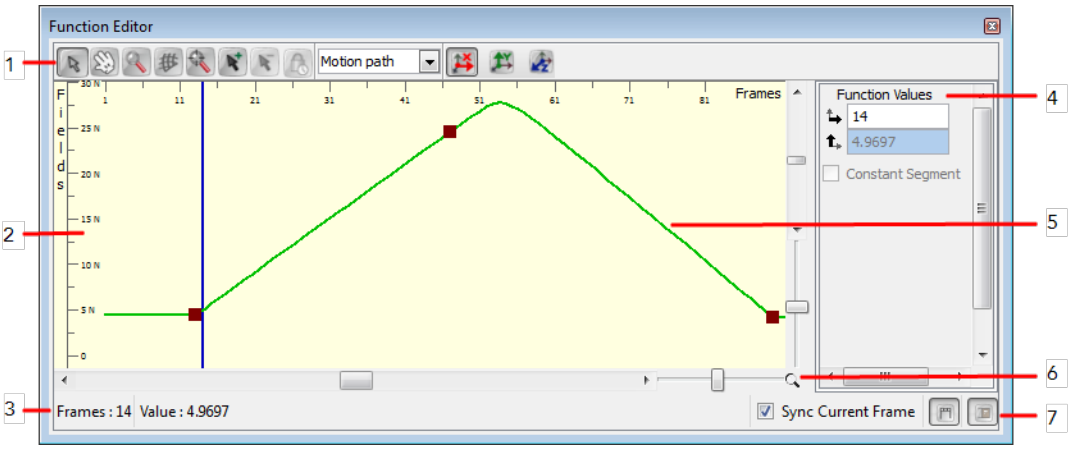
You can use the Function Editor View to create and edit motion paths and movements as well as edit velocity.



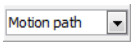
This topic is divided as follows:

- Function Editor View - Overview below
- Adjusting the Velocity on the facing page
- Adding and Deleting Motion Points in the Function Editor View on page 325
- Changing the Values of a Motion Point on page 327

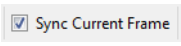
Function Editor View - Overview



1. **Function Editor View toolbar:**
   - **Select**: Lets you manipulate the motion point and velocity Bezier handles.
   - Grabber: Lets you pan in the Function Editor view.

- Zoom: Lets you 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: Lets you add a keyframe on the curve.
- Remove Keyframe: Lets you delete a keyframe on the curve.
- Lock In Time: Lets you 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.
- Projection X: Displays the X axis values in the Fields scale of the graph.
- Projection Y: Displays the Y Axis values in the Fields scale of the graph.
- Projection Z: Displays the Z Axis values in the Fields scale of the graph.

2. **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:** 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:** Displays the selected movement of a peg as an editable curve with visible motion points.
6. **Frames and Fields Scales Zoom:** These sliders let you 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:** Shows or hides the Function Editor View toolbar.
   - **Show/Hide Editing Panel:** Shows or hides 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.

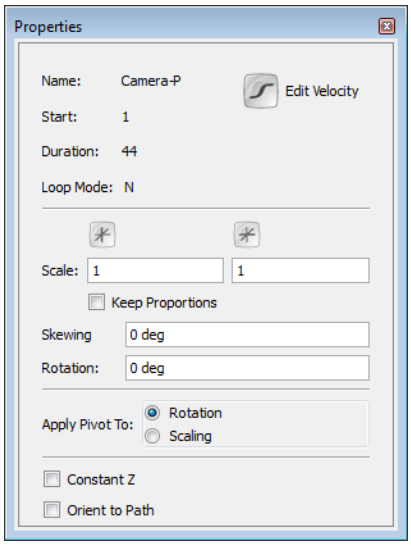
Ease-in and ease-out is the acceleration and deceleration of the movement. The speed of the motion is adjusted between two keyframes so that the movement will start slowly, speed up and then slow down again as it reaches the second keyframe. Adjusting the velocity will create a more natural feel to the movement.

You can set your preferences so that when you create a motion path, a default velocity is automatically applied—see Preferences on page 338

To adjust the velocity of a movement:

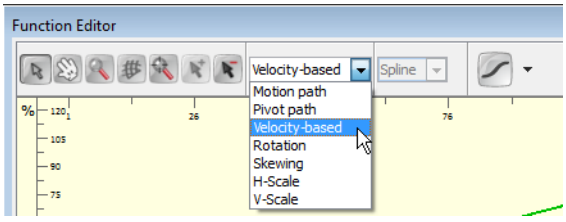
1. In the Animation Tools toolbar, select the Motion tool.
2. In the Camera or Timeline view, select the motion path peg whose velocity you want to adjust.

   The selected peg properties appear in the Properties view.



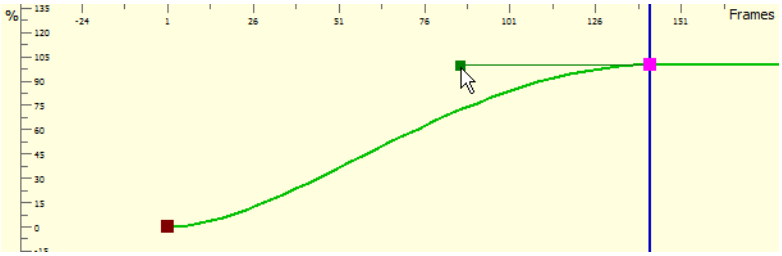
3. In the Properties view, click the Edit Velocity button.

   The Function Editor view opens.
4. In the drop-down menu, select **Velocity-based**, to edit the velocity of the motion path.

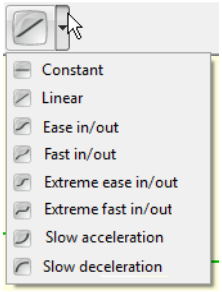


5. In the Function Editor view, click the Curve button and adjust your curve:

   - 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 the **Curve** icon to open the drop-down menu and select the desired velocity option.



- **Constant**: Changes a non-constant segment to a constant segment removing the automatic motion tweening created by Studio.
- **Linear**: Creates a straight line of constant speed for a more automated animation look.
- **Ease in/out**: Creates 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:** Creates a curve that starts quickly, slows down in the middle and ends with a final acceleration.
- **Extreme ease in/out:** Creates a more dramatic ease in, ease out effect.
- **Extreme fast in/out:** Creates a more dramatic fast in, fast out effect.
- **Slow acceleration**: Creates a curve that starts slowly to smoothly accelerate over time.
- **Slow deceleration**: Creates 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:

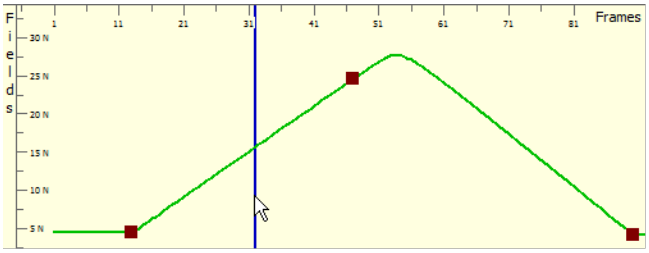
1. In the Animation Tools toolbar, select the Motion tool.

2. In the Camera or Timeline view, select the peg of the motion path you want to edit.

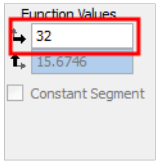
   The selected peg's function curve will appear in the Function Editor View.

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.



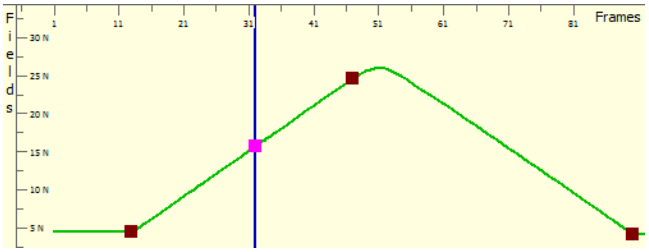
Graph



Edition panel

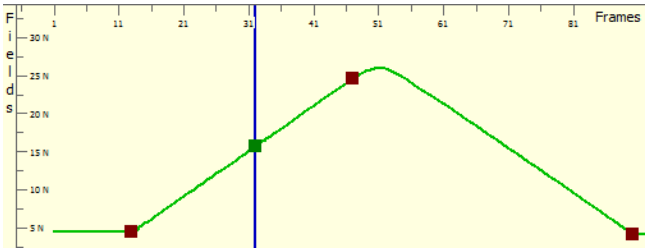
4. Click the Add Keyframes button.

   A keyframe appears on the function curve at the selected frame. This new keyframe is also 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 the Lock In Time button to disable it.

The selected keyframe changes to 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 changes into a keyframe.

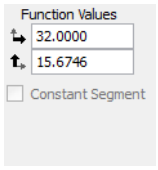
Delete Motion Points

To remove motion points from the Function Editor View:

1. In the Animation Tools toolbar, select the Motion tool.
2. In the Camera or Timeline view, select the peg of the motion path you want to edit.

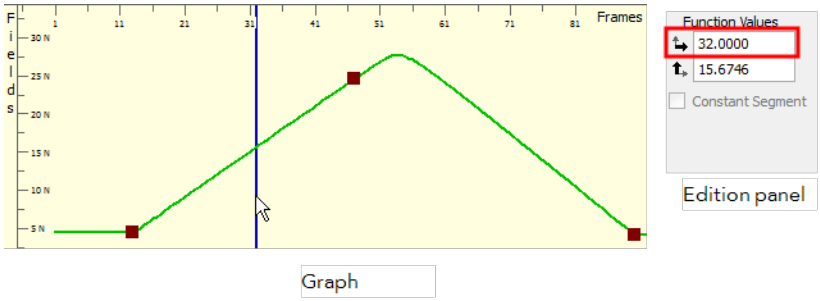
   The selected peg's function curve will appear in the Function Editor view.
3. In the graph section, click on the motion point you want to delete. You can also type in the desired frame in the Edition Panel.

   The selected motion point is 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 the Lock In Time button to enable it.
4. Click the Remove Keyframe button.

   The selected keyframe is deleted from the function curve. It is also 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

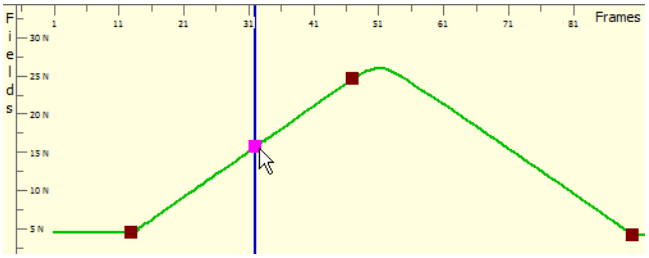
You can modify your motion paths and movements by positioning the motion points directly in the Camera, Top or Side view, but you can also modify the value of the motion points from the Function Editor View.

To modify a motion path motion point's values:

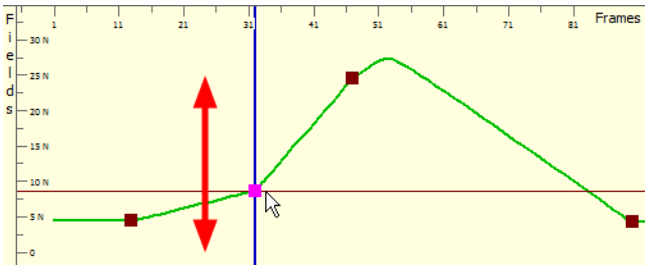
1. In the Animation Tools toolbar, select the Motion tool.
2. In the Camera or Timeline view, select the peg of the motion path you want to edit.

   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.

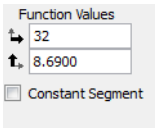
   The selected motion point will be highlighted in the function curve.



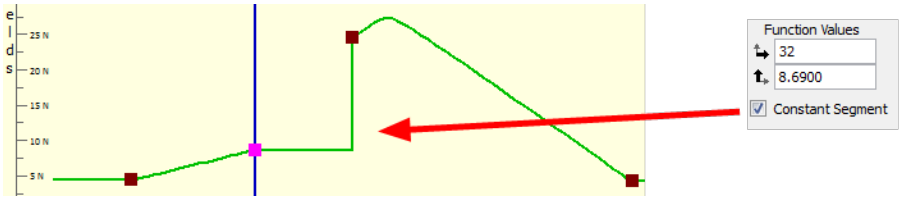
4. Choose with the Field Values buttons which values: X, Y, or Z you want to edit and display in the vertical value scale of the graph.
5. Position your motion point:
   - **Keyframe**: Drag your keyframe up and down to modify the Fields value of the keyframe. Since a keyframe is locked in time, you cannot modify the Frame value. A red guide appears to help you align the keyframe to the right value.



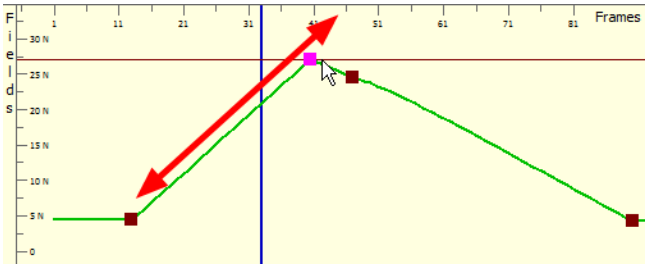
You can also type in the desired value in the Editing Panel.



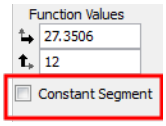
   - Select the **Constant Segment** option if you want to change the non-constant segment following the selected keyframe to constant.



   - **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.


Function Values
27.3506
12
Constant Segment

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 below
- Detach from Parent below
- Changing the Start Frame on the facing page
- Changing the Duration on the facing page
- Change Loops on page 332
- Element Notes on page 333
- Show Timeline Selection on page 334
- Paste Special on page 335

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 connects 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 sceneplanning tool and select the element directly in the Camera, Top or Side view.
2. Select **Element > Arrange > Attach to Next Object**.

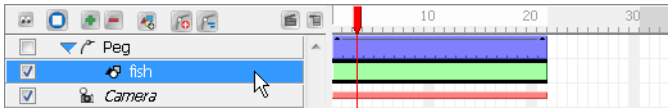
   The selected element becomes the child of the element that was below it.

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.

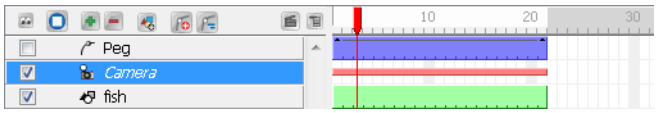
To detach a child element from its parent:

1. In the Animation Tools toolbar, click the Select tool, select **Tools > Animation Tools > Select** or press [6]
2. In the Camera, Top or Side view, select the element you want 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 is detached from its parent.

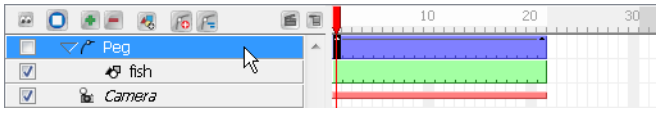


Changing the Start Frame

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.

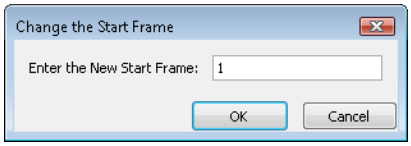
To change the starting frame of an element or peg's motion:

1. In the Timeline view, select the element you want to offset.



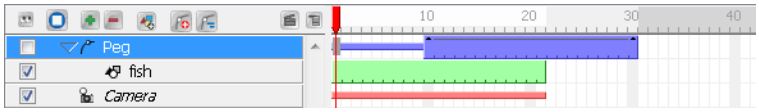
2. Select **Element > Change Start Frame**.

   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.



Changing the Duration

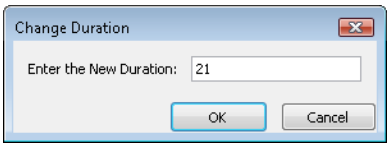
You may need to extend the duration of a peg, for example if you add content or change the exposure of the element that is attached to it.

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**.

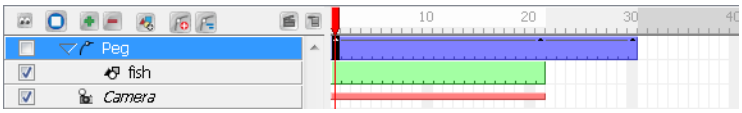
   The Change Duration dialog box opens.



   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.

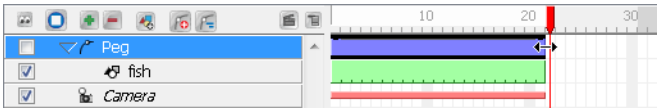
   The duration of the selected element will be updated.



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.



Stretching a peg moves all of the keyframes proportionally.

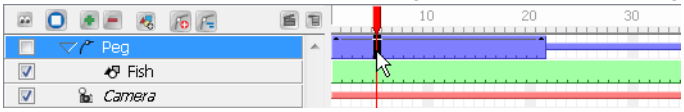
Change Loops

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.

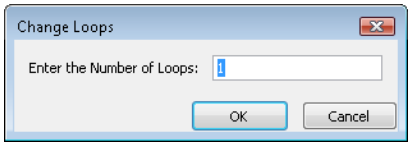
To loop a peg motion using the Change Loops command:

1. In the Timeline view, click on the Peg element's motion segment you want to loop.



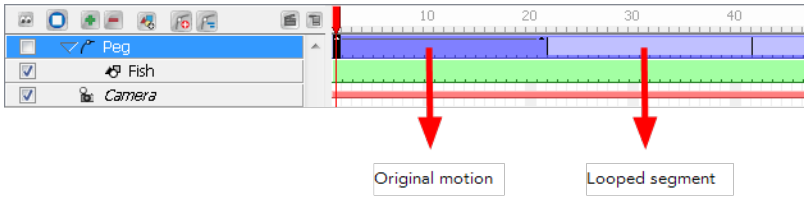
2. Select **Element > Change Loops** or right-click (Windows) or [Ctrl] + click (Mac OS X) directly on the Peg element's motion segment you want to loop and select **Change Loops**.

   The Change Loops dialog box opens.



3. In the Change Loops dialog box, type the number of times you want to repeat the selected motion segment and click OK.

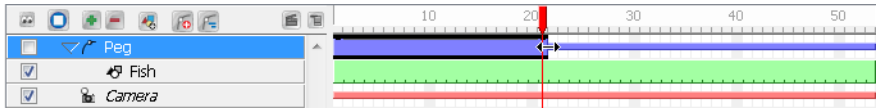
   The peg repeats itself for the number of loops you entered. After the first segment, the peg motion bar representing the looped segment is displayed in light grey.



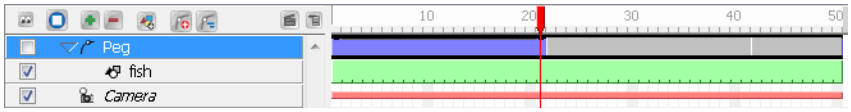
To remove the loop, go through the previous step by step once again and type the value 0 in the Change Loops dialog box. You can also loop a motion with a click and drag.

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.

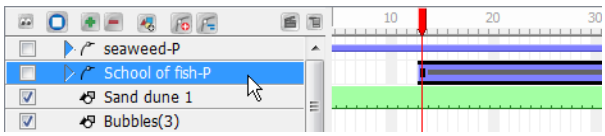


Element Notes

The Element Notes option lets you write notes or comments in a layer for future reference.

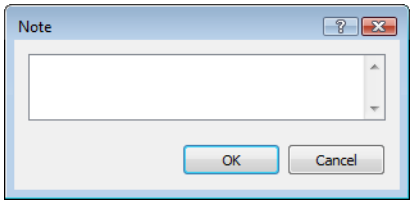
To create an element note:

1. In the Timeline view, select the layer in which you want to include a note or a comment.

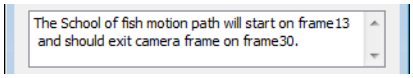


2. In the Timeline menu, select **Add Element Note** or right-click (Windows) or [Ctrl] + click (Mac OS X) on the layer and select **Add Element Note**.

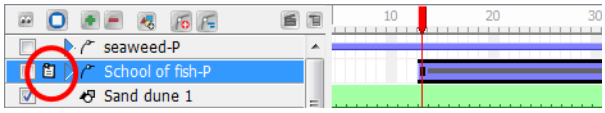
   The Note dialog box opens.



3. In the empty text field, type in your note or comment and click OK.

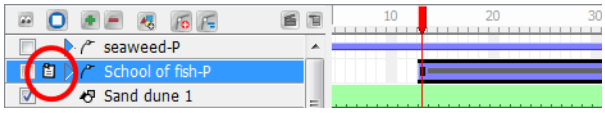


   The Note icon appears on the selected layer.



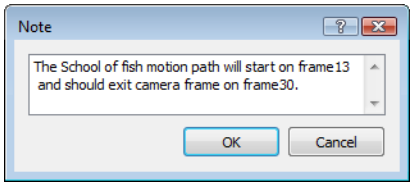
To open and edit an element note:

1. In the Timeline view, select the layer containing the element note.



2. In the Timeline menu, select **Update Element Note** or right-click (Windows) or [Ctrl] + click (Mac OS X) on the layer and select **Update Element Note**. You can also double-click the Note icon of the layer.

   The Note dialog opens, displaying the element's note previously entered.



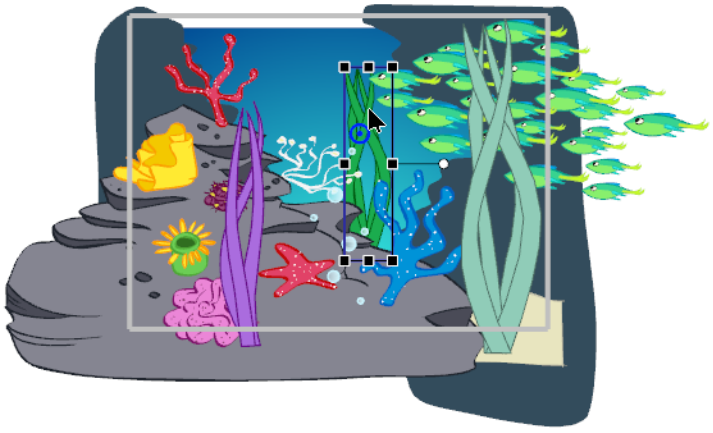
3. You can edit the note if needed, and click OK.

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.

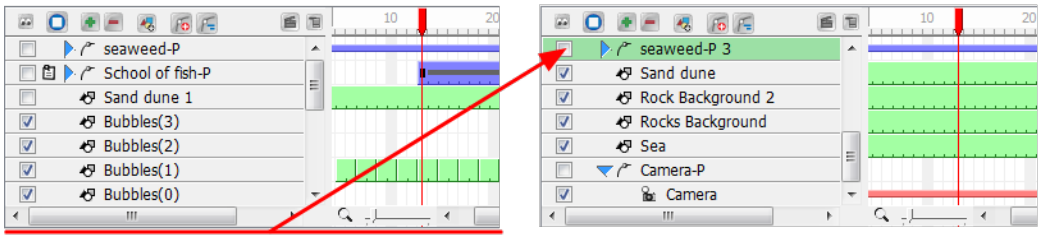
To show the timeline selection:

1. In the Camera view, select the element you want to find in the Timeline view.



2. Select **View > Show Timeline Selection** or press [O].

   The Timeline view automatically sets its focus so that the selected layer appears on top of the view.

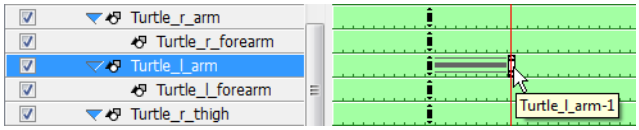


Paste Special

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.

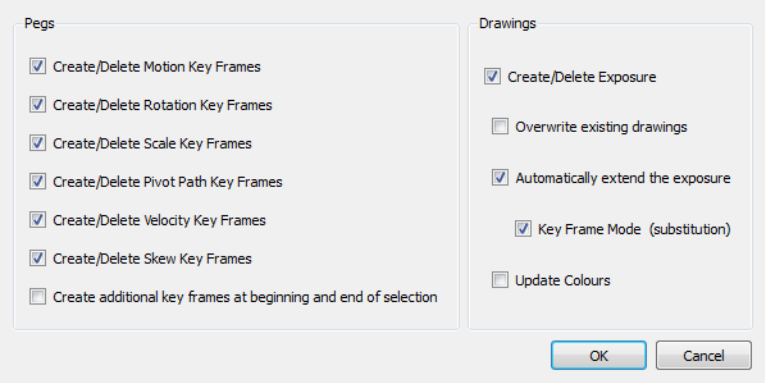
To use the Paste Special command:

1. In the Timeline view, select the frames to copy. This selection can include single or multiple frames, drawings and keyframes.

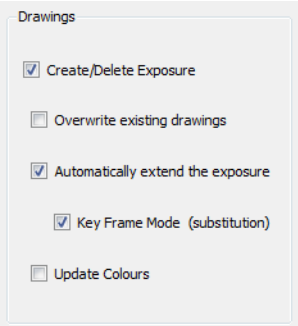


2. Select **Edit > Copy Cell** or press [Ctrl] + [C] (Windows) or [⌘] + [C] (Mac OS X)
3. In the Timeline view, select the cell in which you want to paste the copied values.
4. Select **Edit > Paste Special** or press [Ctrl] + [B] (Windows) or [⌘] + [B] (Mac OS X).

   The Timeline Paste Special Preferences dialog box opens.



5. In the Pegs section select/deselect the options to choose the values of the keyframe you want to paste:
   - **Create/Delete Motion Key Frames**: Pastes the translation value of the copied keyframe.
   - **Create/Delete Rotation Key Frames**: Pastes the rotation value of the copied keyframe.
   - **Create/Delete Scale Key Frames**: Pastes the scale value of the copied keyframe.
   - **Create/Delete Pivot Key Frames**: Pastes the pivot position value of the copied keyframe.
   - **Create/Delete Velocity Key Frames**: Pastes the velocity value of the copied keyframe.
   - **Create/Delete Skew Key Frames**: Pastes the skew value of the copied keyframe.
   - **Create additional key frames at beginning and end of selection**: 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 select/deselect the desired options:



   - **Create/Delete Exposure**: Pastes 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:** Overwrites 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:** Automatically extends 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 on page 395 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** or press [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** or press [Ctrl] + [Shift] + [B] (Windows) or [⌘] + [Shift] + [B] (Mac OS X).

   Your copied selection is pasted using the same options as the last time you used the Paste Special command.

Preferences

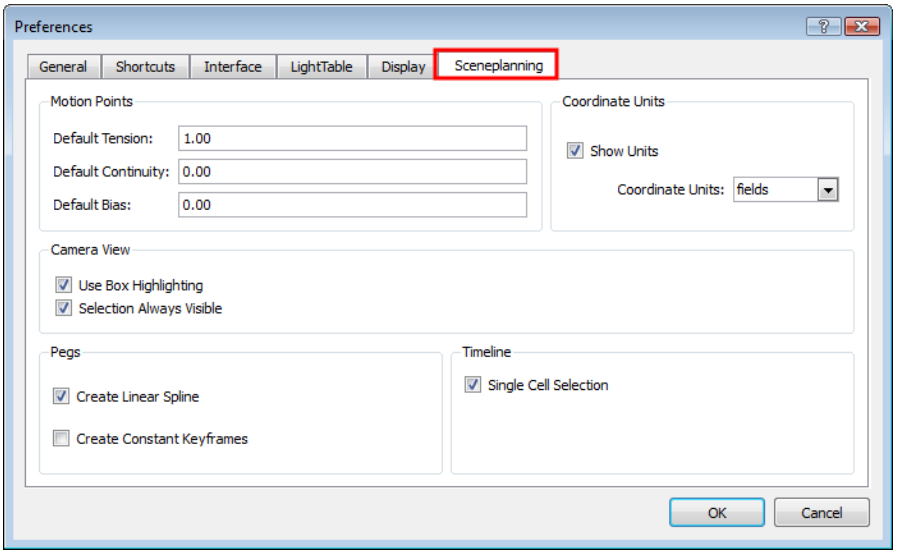
You can set preferences that can help you be more efficient and comfortable when you work on your scene setup:

In 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 8.1 8.0 > Preferences**.

Sceneplanning Preferences

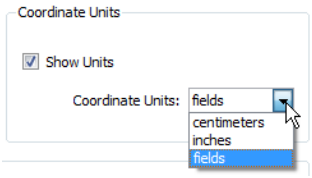


Motion Points

In the Motion Points section, you can set the default Tension, Continuity and Bias values when adding motion points to your motion paths—see Switching between Keyframes and Control Points on page 315.

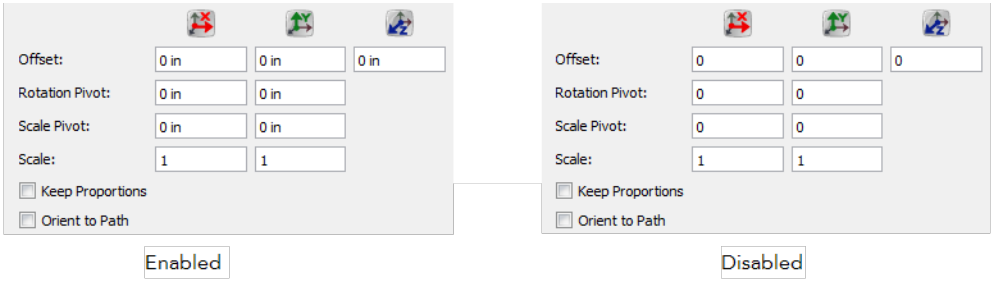
Coordinate Units

You can choose the coordinate units used in the scene's Properties view.



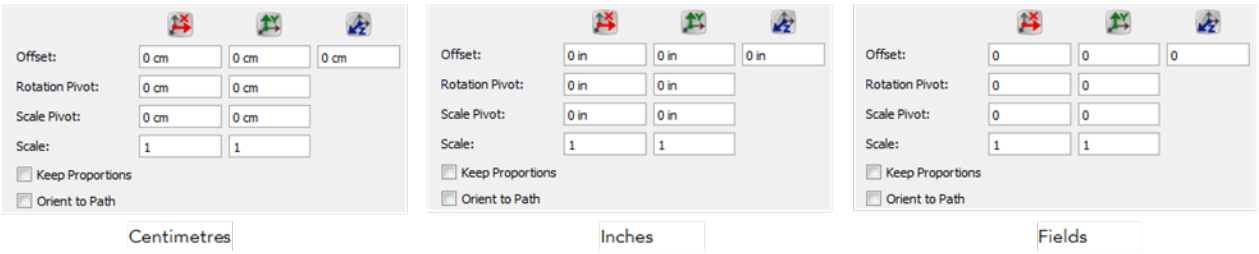
Show Units

This option lets you 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

This drop-down menu lets you choose between the three available unit types.

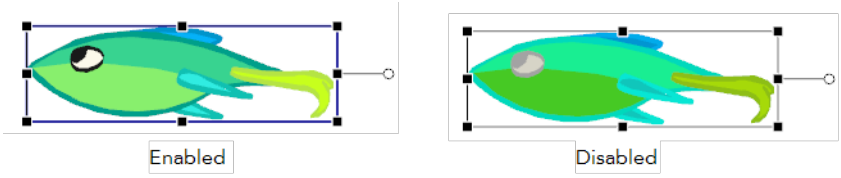


Camera View

This section lets you set the selection display preferences for the Camera view.

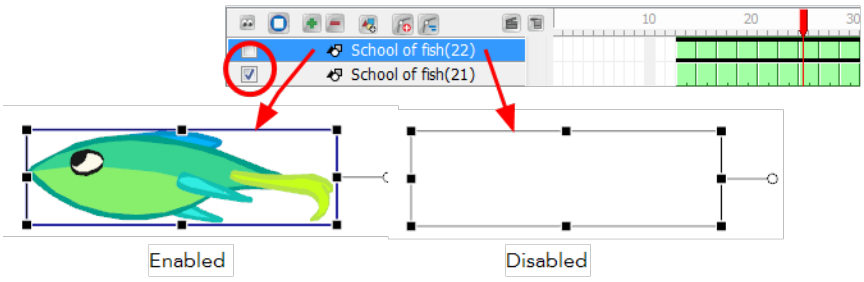
Use Box Highlighting

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.



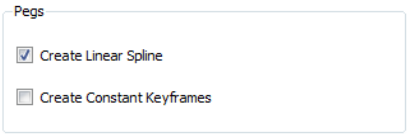
Selection Always Visible

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

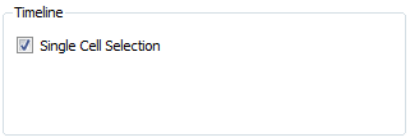
By default, the Create Linear Spline option is enabled, so when you animate an element with a motion, rotation or scaling, the velocity will be set to Linear. This means that the motion tweening executed by Studio will be straight with no variation in the speed. You can disable this option so that every time you create a motion, rotation or scaling, the velocity will be set to the default ease-in, ease-out curve—see Adjusting the Velocity on page 323.

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.

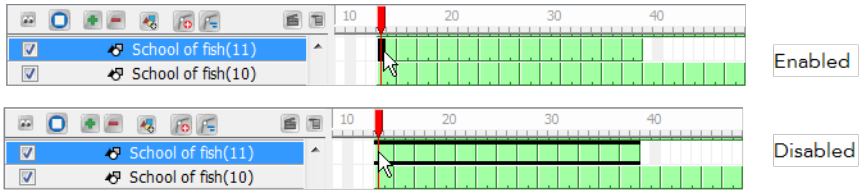
You can enable the Create Constant Keyframes so that every time you create a motion, the segments between the keyframes will automatically be constant. No motion tweening is calculated and the position jumps from one to another at each keyframe—see Animating a Puppet on page 395 to learn more about constant and non-constant segments.

Timeline

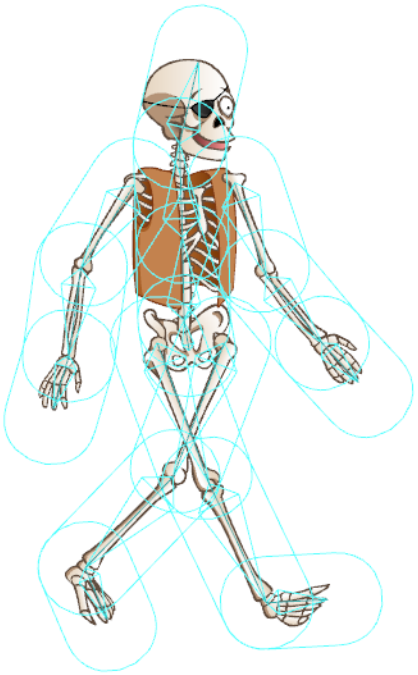


Single Cell Selection

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.



Chapter 12: Bones



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:

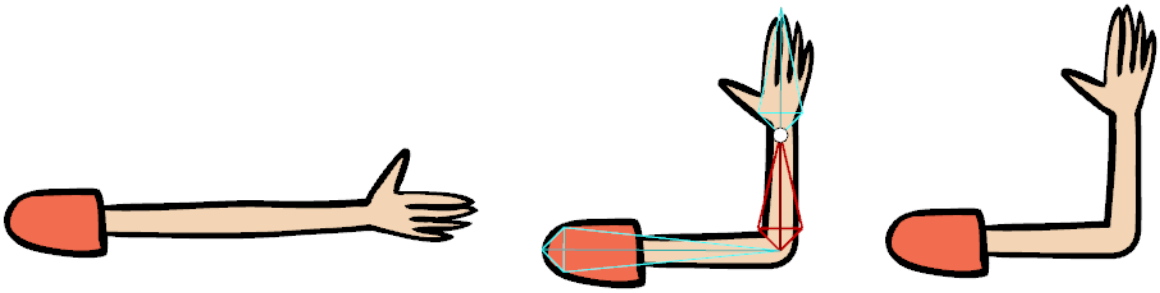
- About the Skeleton Effect on the next page
- Choosing Your Character on page 349
- Adding the Skeleton on page 352
- Animating the Skeleton on page 376
- Skeleton Effect Properties on page 389
- Preferences on page 392

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 path:

- 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 is created in the Timeline view and the motion is automatically interpolated (all the drawings between the two keyframes will be created for you) if your keyframes are set to non-constant.

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!

Related Topics

- Understanding Keyframes and Drawings on page 399
- Constant and Non-Constant Segments on page 403
- Adjusting the Velocity on page 411
- Using the Onion Skin in Cut-out Animation on page 415

Bone Tools Toolbar

By default, the Bone Tools toolbar is located just below the Animation Tools toolbar on the left side of the application. Use these tools to create, set up and animate your bone structure.

There are two types of tools:

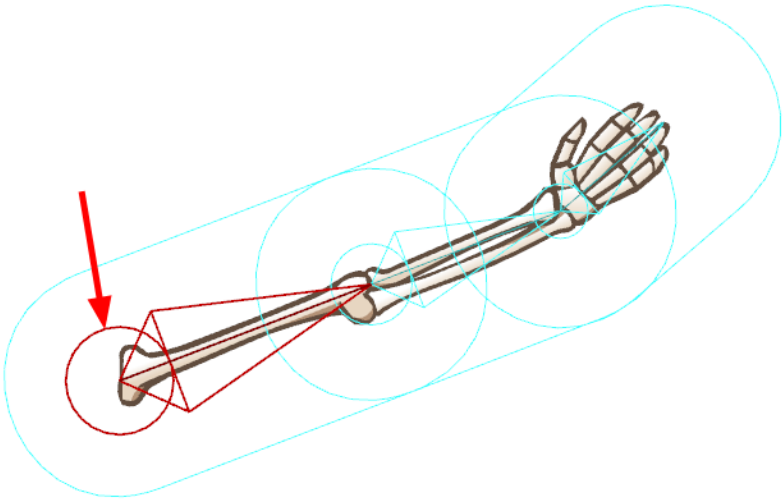
- Setup mode
- Animation mode

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 view.

When in Setup mode, a large circle appears at the base of your bones.



These are the bone setup 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 **Tools > Bone Tools > Bone Setup** or press [J].

- **Bone Creator Tool**

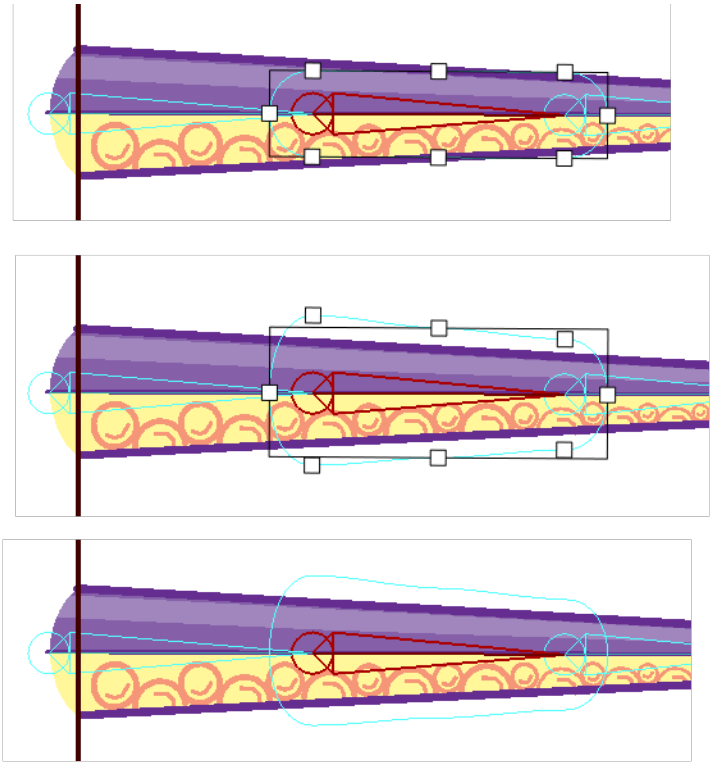
  This tool is used to create individual bones. Once a bone is created, it is automatically selected. When a bone is selected, the next bone created will automatically be parented to it, creating a chain. If you want to break the chain to create a freestanding bone or to start a new chain, hold down the [Shift] key as you create.

  You can also select **Tools > Bone Tools > Bone Creator** or press [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. You can use the Bone Influence tool to move the square points on the bounding box to reshape the elliptical zone of influence.

  You can also select **Tools > Bone Tools > Bone Influence.**



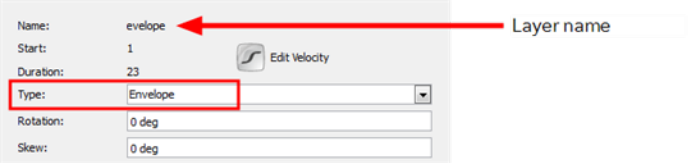
- **Bone Parent Tool**

  This tool is used to parent different bone chains to one another. You can also select **Tools > Bone Tools > Bone Parent.**

- **Connect Character Setup Mode Tool**

  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 Setup mode, where its body parts are typically separated and spread apart—see Adding Your Own Character to the Robo-Skeleton Template on page 355.

  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.



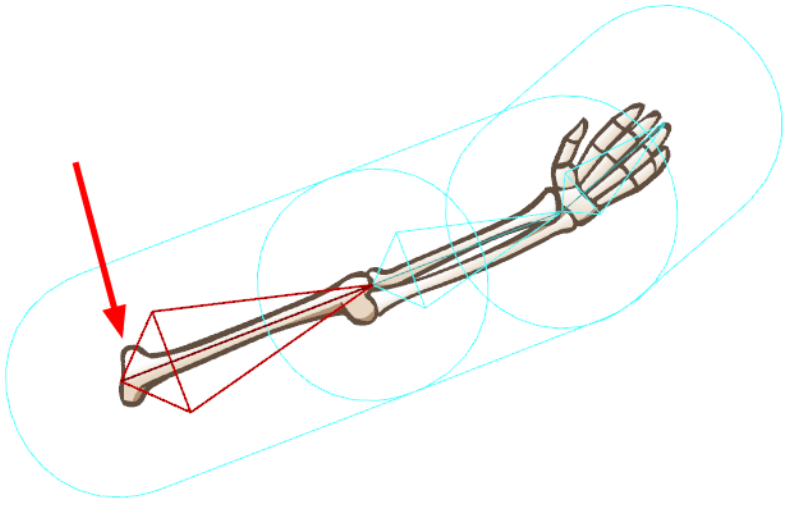
  You can also select **Tools > Bone Tools > Show-Hide.**

Refer to the Adding the Skeleton on page 352 topic to learn how to use these tools.

Animation Mode

The Animation mode is automatically active when you select the Bone Manipulator tool or the Natural Movement tools. This means that the Camera view displays the current pose of the bone structure at the selected frame and any manipulation you make creates a keyframe in the Timeline and is animated.

When in Animation mode, notice that the large circle at the base of the bones in Setup mode disappears.



- **Bone Manipulator Tool**

  This tool is used to animate the bone structure. You can drag, squash, stretch, rotate or scale a selected bone chain, creating an animation keyframe in your Timeline view.

  You can also access this tool by selecting **Tools > Bone Tools > Bone Manipulator** or pressing [H]—see Animating Bones on page 380.

- **Natural Movement Inverse and Forward Tools**

  These tools are used to animate the bone structure. The squash and stretch must be the same way as the Bone Manipulator tool, but when rotating a bone, all children bones in the chain must also slightly rotate along to create a smoother and more natural movement.

  The Natural Movement Inverse rotates the children bone in the opposite direction of the parent, creating resistance. The Natural Movement Forward rotates the children bone in the same direction as the parent, creating graceful movement such as a ballerina lifting her arm.

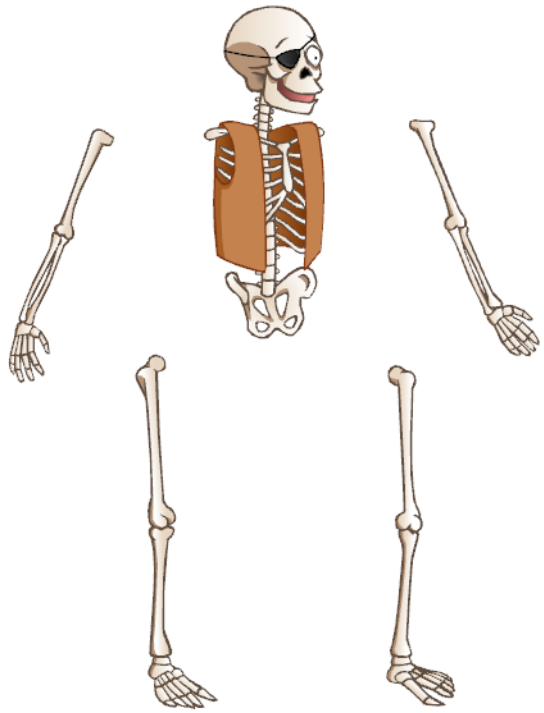
  You can also access this tool by selecting **Tools > Bone Tools > Natural Movement Inverse** and **Natural Movement Forward**—see Natural Movement on page 383.

Refer to the Animating the Skeleton on page 376 topic to learn more about these tools.

Choosing Your Character

Before building your skeleton, the first thing you need to do is 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.



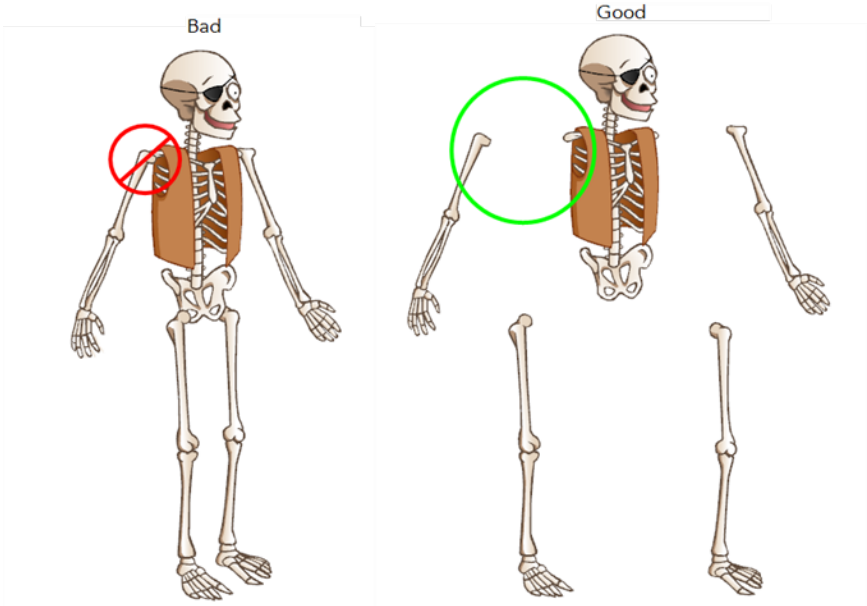
You can also create your character from a picture or a bitmap image, however be sure to vectorize the image when importing, otherwise it will not be editable. For more information on importing and vectorizing bitmaps images, see Importing and Vectorizing Images on page 165.

If you plan to use one of Studio's Robo-Skeleton templates, see Robo-Skeleton Templates on page 352 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, all parts of the character should be separated in space. This is to ensure the cleanest movement between character pieces when animating bones affected by elliptical influence areas. You should also group each of the separate parts and arrange the ordering of these limbs and body groups inside the drawing.

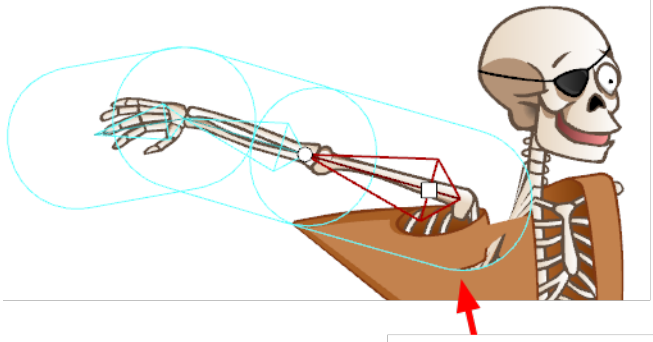
The limbs do not need to be on separate drawing layers. They simply need to be drawn separately within the same drawing. If you want to have more flexibility in ordering your layers, such as having an arm pass in front of the torso and another one behind, draw your pieces on separate drawing layers and attach them to the same Skin layer within the Skeleton effect.



Refer to Drawing and Design on page 81 to learn about the drawing tools and options.

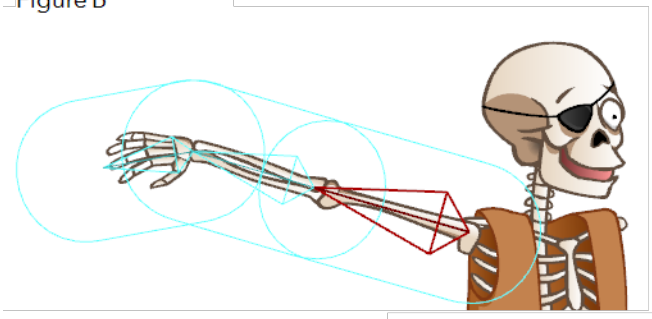
This is an example of what could happen if a character's limbs are overlapping during setup (Figure A), versus one whose limbs were separated from the body during setup (Figure B).

Figure A



Note the distortion here...

Figure B

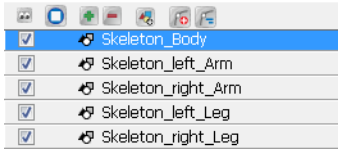


... but not here.

Since the Skeleton effect is 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 draw all your character's parts on the same drawing element, or you can separate the different parts so 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.



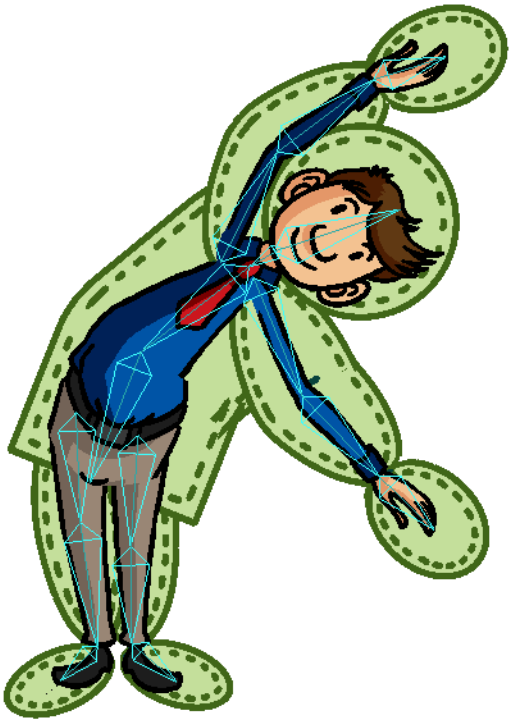
Refer to the Adding the Skeleton on the next page and Animating the Skeleton on page 376 topics to learn more.

Adding the Skeleton

When it comes to adding bones to your drawings, there are 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, then you will have the freedom to make your own animated sequences.

- Robo-Skeleton Templates below
- Building the Skeleton on page 361

Robo-Skeleton Templates

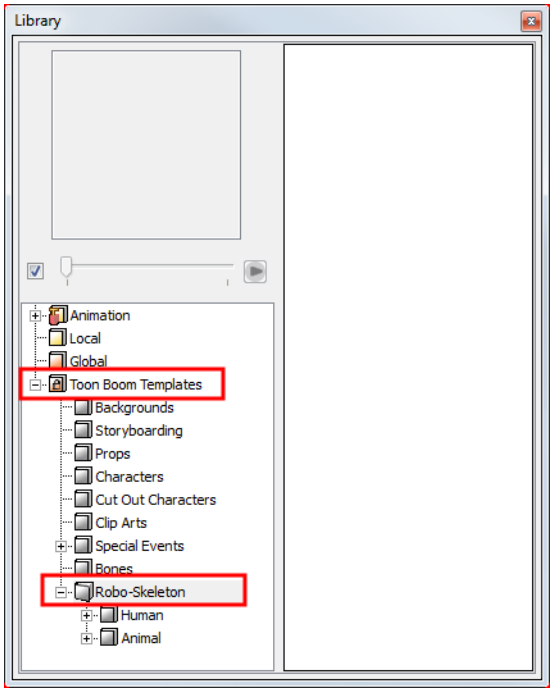


Although creating a character can be fun, the process of animating it can be a little daunting. Take away some of the work by using Studio's pre-made Robo-Skeleton templates. You can easily add your own character artwork to the template and watch it move within minutes.

Choosing Your Robo-Skeleton Template from the Library

All the Robo-Skeletons are available from the Library view. To access the templates, follow this 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 folders and select **Reload Default Templates**.

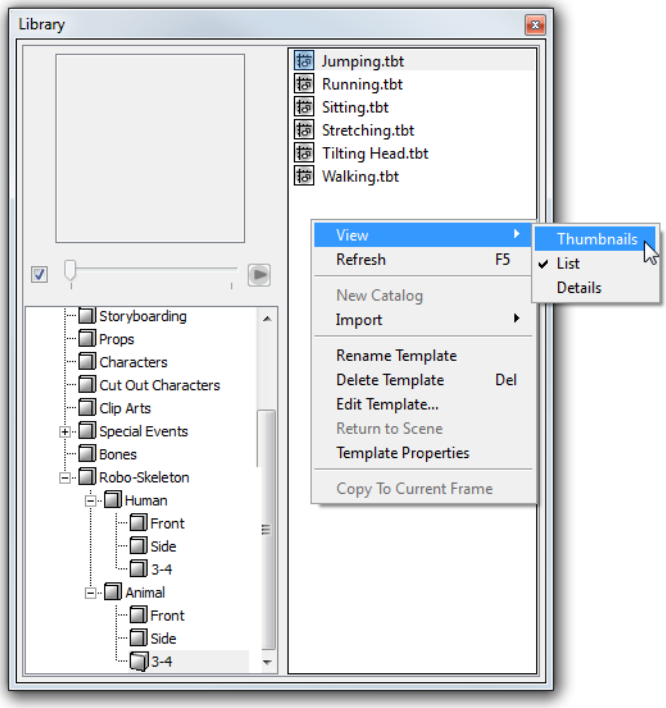


Inside the Robo-Skeleton folder are Robo-Skeleton templates of both human and animal characters. Each character has its own subfolder containing templates grouped into front, side and 3/4 poses. Refer to the following table for a more detailed description of the templates:

Folder	Human	Animal
Front	Jumping Jumping Jacks Stretching Waving Dance Move 01 Dance Move 02 Dance Move 03	Sitting Stretching Tilting Head Walking
Side	Jumping Running Squat Walking Dance Move 01 Dance Move 02 Dance Move 03	Jumping Running Sitting Sniffing Stretching Walking
3/4 View	Jumping Running Squat	Jumping Running Sitting

	Walking Waving Dance Move 01 Dance Move 02 Dance Move 03	 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**.

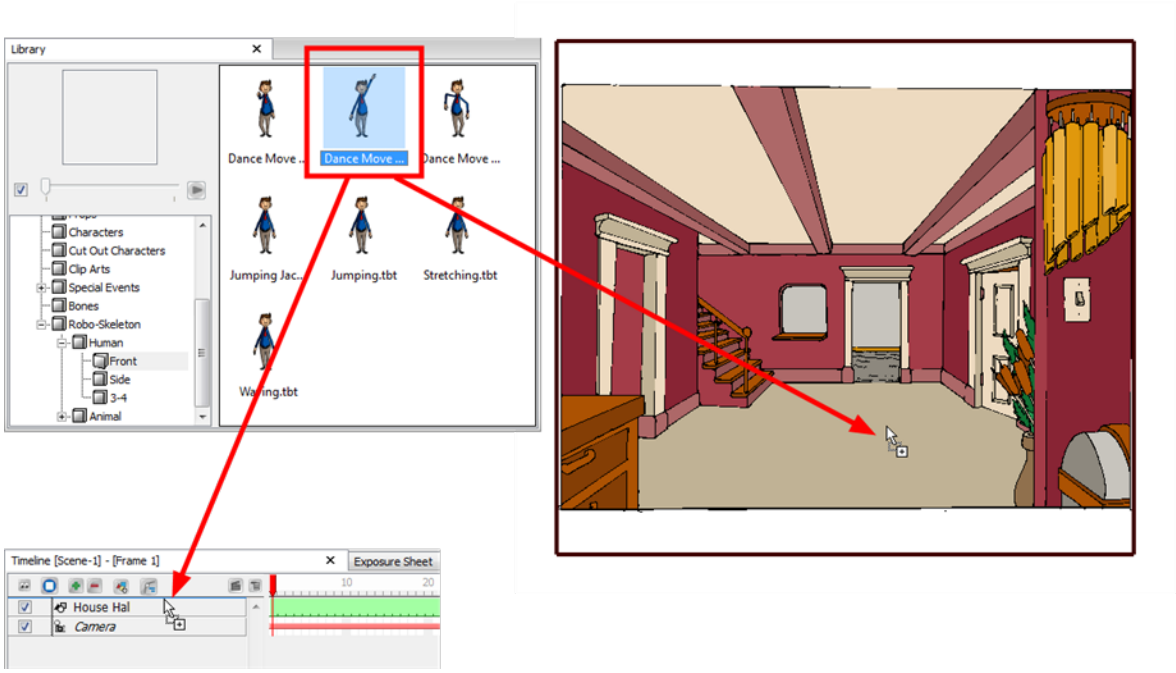


Importing Your Robo-Skeleton into a Scene

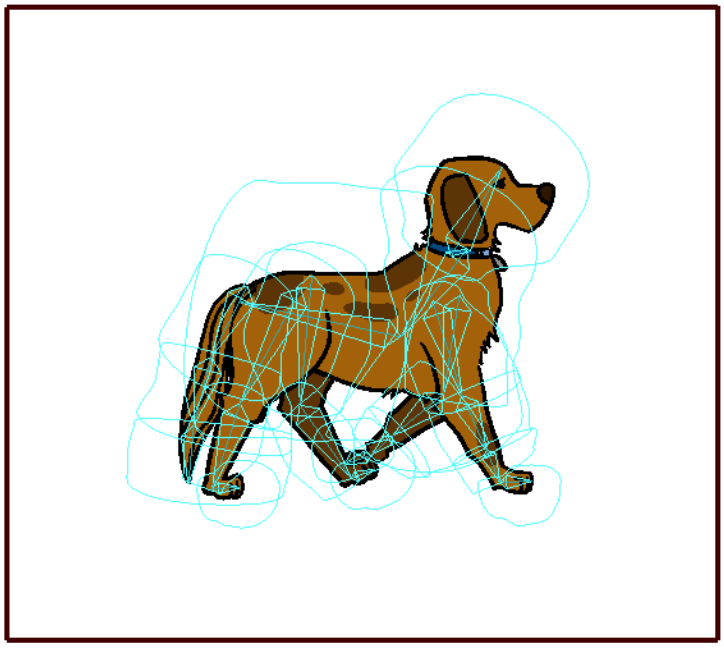
You can drag a template from the Library view to the Camera or Timeline view to add it to your animation.

To import a template into a 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.

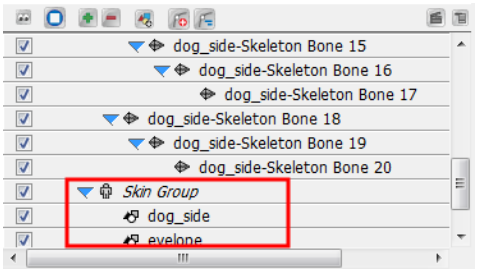


Adding Your Own Character to the Robo-Skeleton Template



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 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 contains drawings of zones surrounding each body part of the character.

To view the envelope layer:

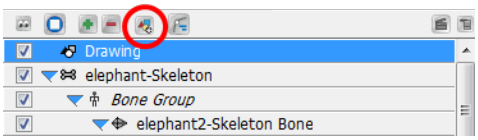
1. In the Bone Tools toolbar, click the Connect Character Set-up Mode button.

   The envelope zones appear and the character is split apart as you would see it in Setup Mode.

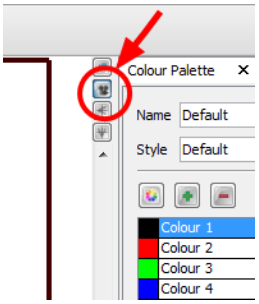
To have the character move with the pre-made animation of the Robo-Skeleton template, you need to add your own artwork to the Skin Group to replace the **dog_side** layer. You can do this in several ways: by creating a new drawing layer, using the envelope zones as guidelines and then creating your own 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 the Add New Drawing Layer button to create a new drawing layer.

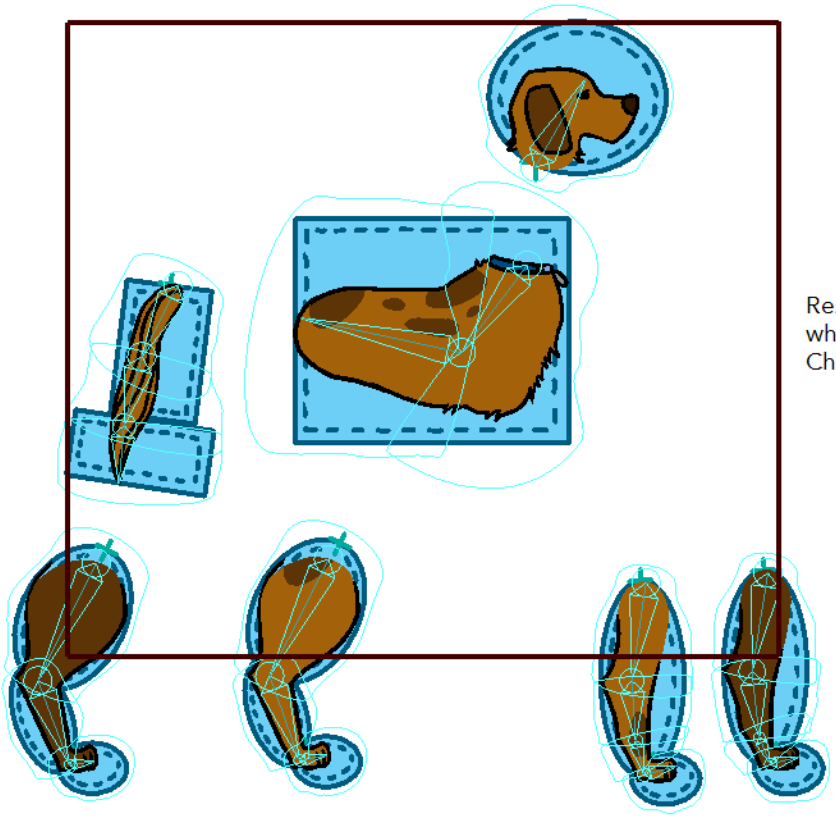


2. Go to the Drawing view by clicking on the Drawing view button on the upper-right side of the Camera view.



   OR

If you want to continue working in the Camera view, click the Connect Character Set-up Mode button to display the envelope zones.

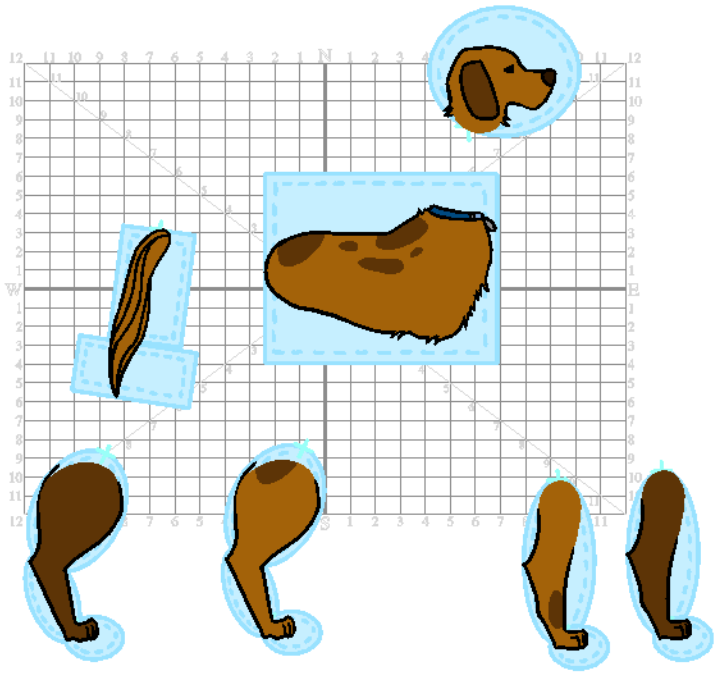


Result in the Camera view when using the Connect Character Set-up Mode button

Use the Erase tool or Select tool in combination with the [Del] 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 the Auto Light Table button in the Onion Skin toolbar (Top toolbar on Mac OS X).

   The envelope image appears in washed out colours in the Drawing view. You may 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.

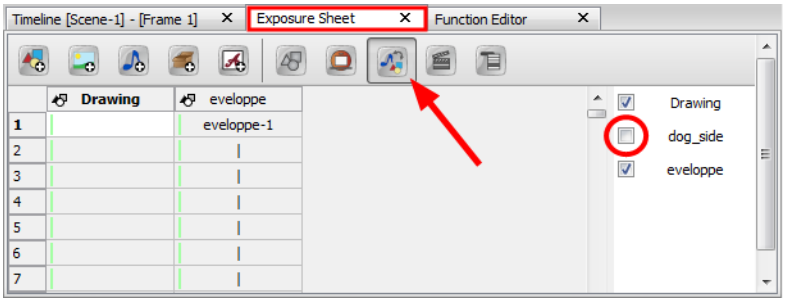


As is the case with the dog, when the character is whole, two of the legs are partially hidden behind the rest of the body. This would also happen to the image of a human character in profile; one arm and one leg would be hidden. To fix problems like this, all the limbs are separated and then reattached to the body in the Bone setup stage (which is already done for the Robo-Skeleton templates), so all the body parts can move independently.

4. If you are working in the Camera view, in the Timeline view, hide (deselect) the current Skin Group art layer. In this case, it is the **dog_side** layer. Leave the envelope layer enabled.

   OR

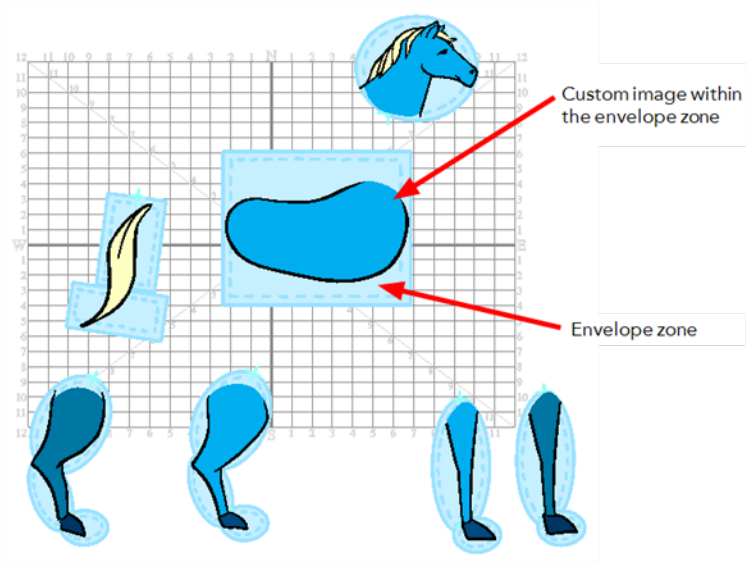
   If you are working in the Drawing view, in the Exposure Sheet view, click the **Toggle Element List** button and then hide (deselect) the current Skin Group art layer. In this case, it is the **dog_side** layer. Leave the envelope layer enabled



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.

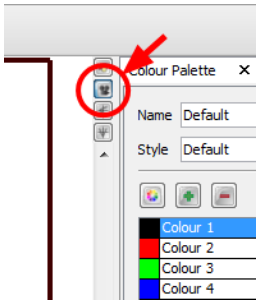


For more information on how to create your own artwork, see Drawing and Design on page 81.

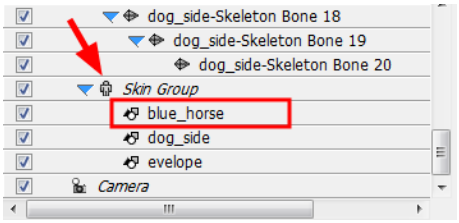
For more information on how to import bitmap images, see Importing and Vectorizing Images on page 165.

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 by:
   - Right-clicking on the frame you want to extend the exposure to and selecting **Extend Exposure**.

   OR
   - Clicking on the frame that you want to extend the exposure to and pressing [Ctrl] + [Shift] + [1] (Windows) or [⌘] + [Shift] + [1] (Mac OS X).
7. If you are not already there, return to the Camera view by clicking the Camera view button.



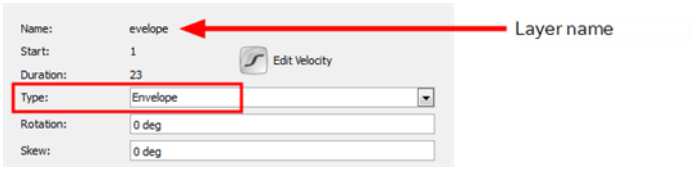
8. If you did not draw directly on the old Skin Group art layer, then in the Timeline view, select your character artwork layer and drag and drop it over the Skin Group layer.

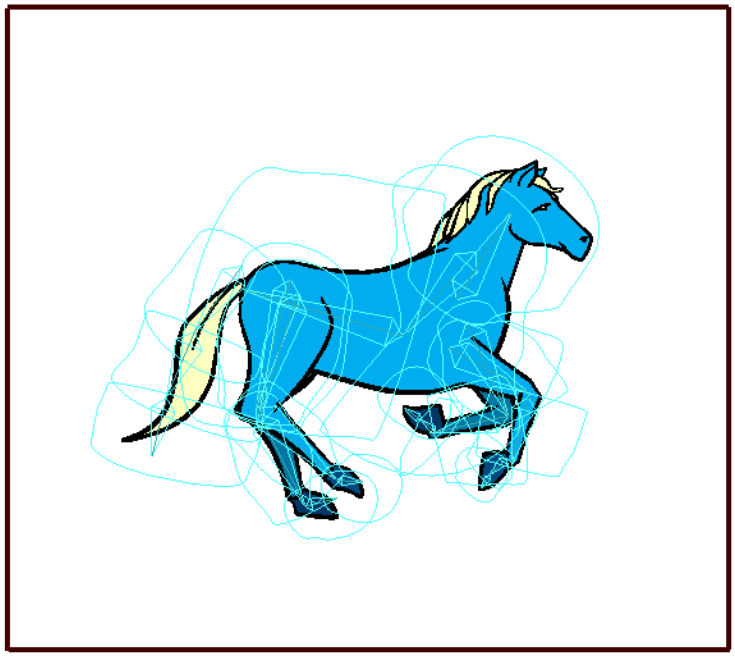


9. If you did not create your new character artwork on the old Skin Group art layer, either hide the old Skin Group art layer or delete it from the Timeline view entirely.
10. Hide the envelope by deselecting the Connect Character Set-up Mode button from the Bone Tools toolbar.

    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. If so, click the Bone Manipulator tool.

    As a test, click the envelope layer and take a look at the Layer Properties panel. Notice the Type is set to Envelope. Any layer set to Envelope through the Properties panel can be controlled by the Connect Character Set-up Mode button.





    Your character is connected to the Robo-Skeleton template and appears in place of the generic envelope.
11. In the Playback toolbar (Top toolbar on Mac OS X), click 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—see Setting the Influence Area on page 369 and Setting Up the Bones on page 366.

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:

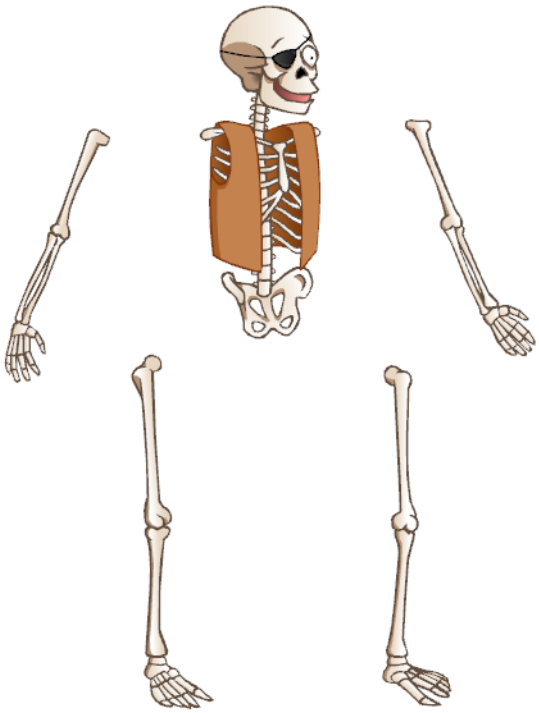
- Adding Bones below
- Setting Up the Bones on page 366
- Setting the Influence Area on page 369
- Parenting Bone Chains on page 373

Adding Bones

There are two different ways you can add bones to artwork. The fastest and easiest way is to select the layer with your artwork, and then select the Bone Creator tool. The last step is simply to create bones on top of your artwork. You can also add bones through the Timeline view by adding a Skeleton effect.

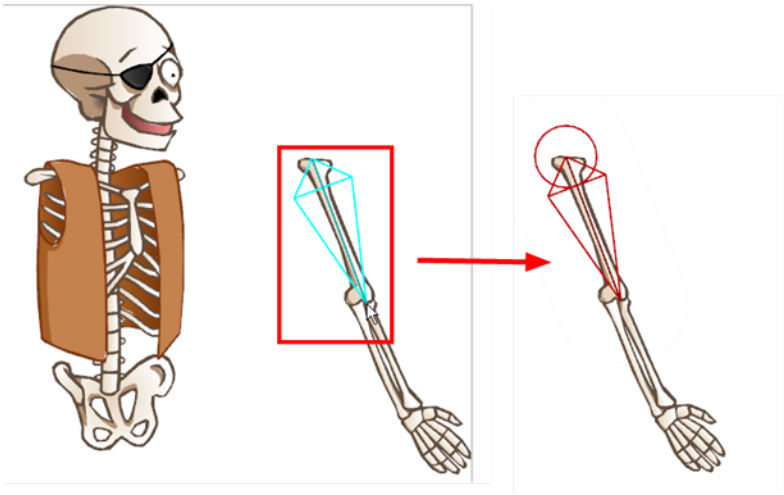
To add bones to your character:

1. Make sure you are working in the Camera view.
2. In the Timeline view, select the layer that contains your artwork.
3. From the Bone Tools toolbar, select the Bone Creator tool or press [U].
4. Take a look at your character or object, and decide which parts will be at the back (hidden behind other parts). These are the parts you should start creating bones for first.

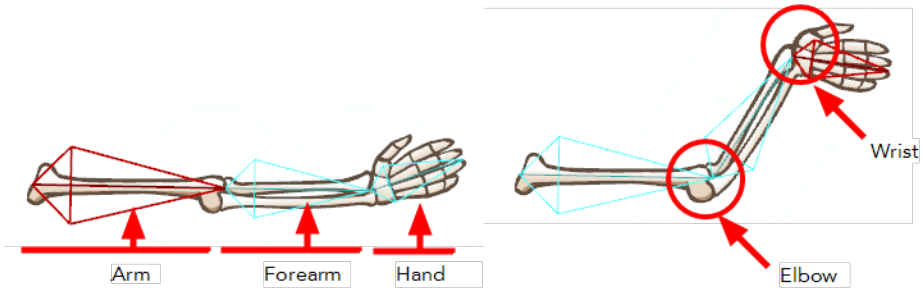


The bones and bone chains that are created first will be at the top of the Timeline layer stack when you are finished; therefore, they will be located at the front of the visibility hierarchy.

5. In the Camera view, click and drag to create the first bone, following your design.

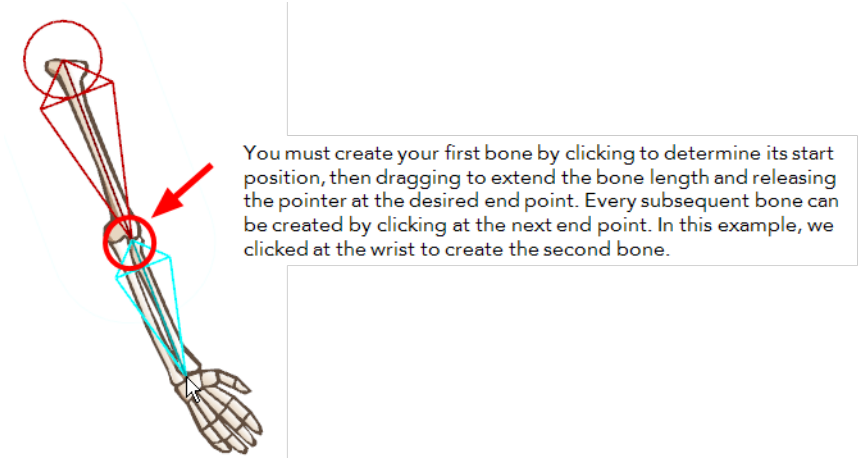


When creating the bone structure, think about where you want the image to bend. In this example, we want to have two bends (one at the elbow and one at the wrist). Therefore three bones should be created: the arm, forearm and hand.



If you do not position the bone perfectly the first time, you can fix it later using the Bone Setup tool—see Setting Up the Bones on page 366.

6. Once you have created a bone, it automatically becomes selected and appears in red. The next bone you create is automatically linked and parented to the currently selected bone. This creates a chain linked by a joint.

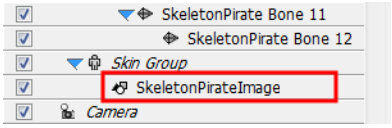


7. Once you have created a full bone chain for one limb, you can, for example, start a new freestanding bone or bone chain for a different part of your character or object. Hold down the [Shift] key to do this.

Be sure to let go of the [Shift] key if you want to create a connected chain, otherwise, you will create a series of unconnected bones.

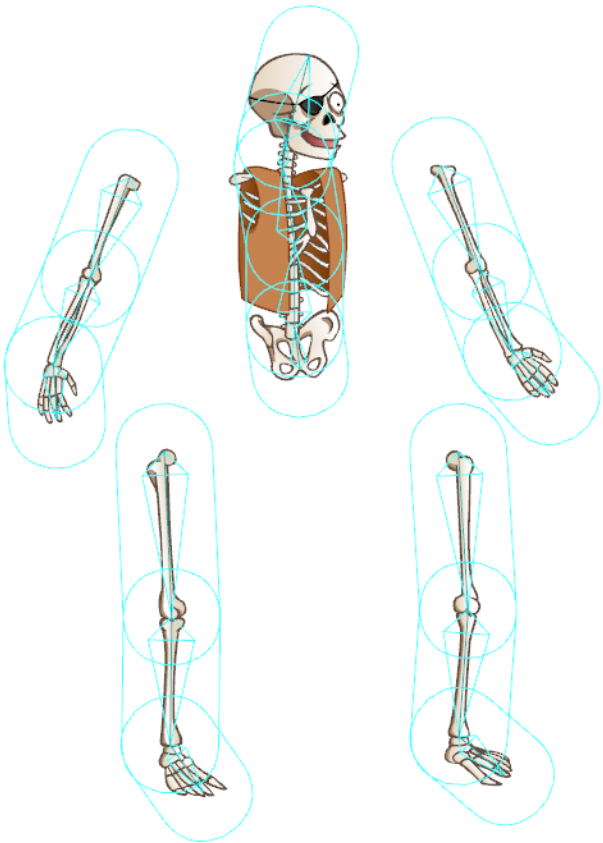
8. Take a look at the Timeline view. As you create a bone chain, notice that a new bone layer is automatically added for each bone in the chain under the Bone Group. The bones in a chain are organized in a hierarchy, while freestanding bones are just below the main Bone Group.

Notice also that the drawing layer with your character or object artwork is automatically 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 on page 197 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.

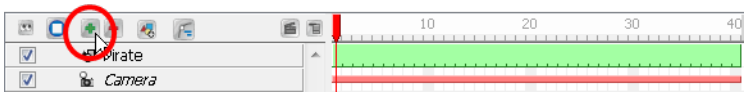


Adding Bones from the Timeline View

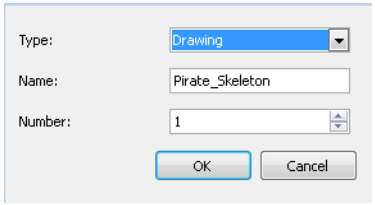
Another way to add bones to your artwork is to add a Skeleton effect to your Timeline view and then connect your character's artwork to it.

To add a Skeleton effect:

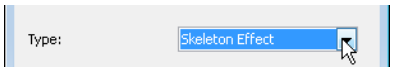
1. In the Timeline view, click the Add New Elements button.



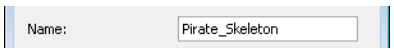
The New Elements dialog box opens.



2. From the Type list, select **Skeleton Effect**.

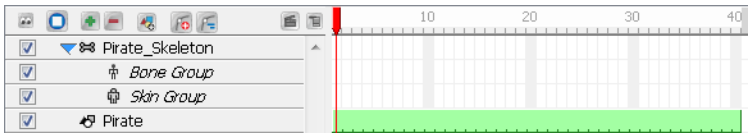


3. In the Name field, give a name to the Skeleton Effect element.

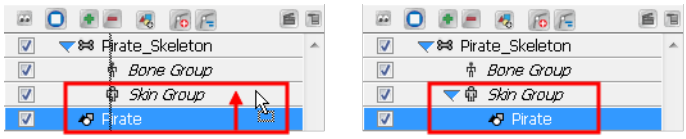


4. Click OK.

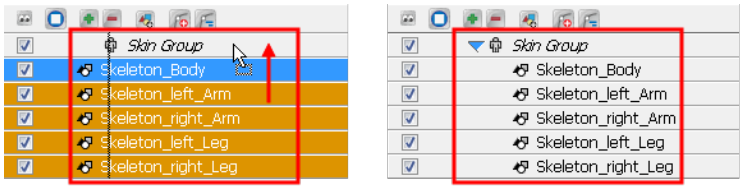
   The Skeleton effect appears in the Timeline view.



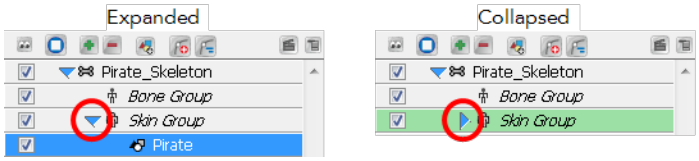
5. Select and drag the drawing layer containing your character onto the Skin Group. This is where you connect any art layer that you want to be influenced by the bones. Make sure to drop the drawing layer directly on the Skin Group to parent it to the Skin Group.



   If your character's parts are drawn on different elements, make sure to parent all the drawing elements to the Skin Group.



6. 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 Library on page 182 to learn more about using the Library view.

7. From the Bone Tools toolbar, select the Bone Creator tool or press [U].

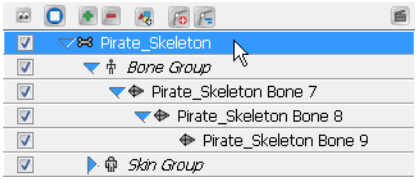
8. Take a look at your character or object, and decide which parts will be at the back (hidden behind other parts). These are the parts you should start creating bones for first.

   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.

9. In the Camera view, click and drag to create the first bone, following your design.

10. Once you have created a bone, it automatically becomes selected and appears in red. The next bone you create is automatically linked and parented to the currently selected bone. This creates a chain linked by a joint.

11. 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 lets 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

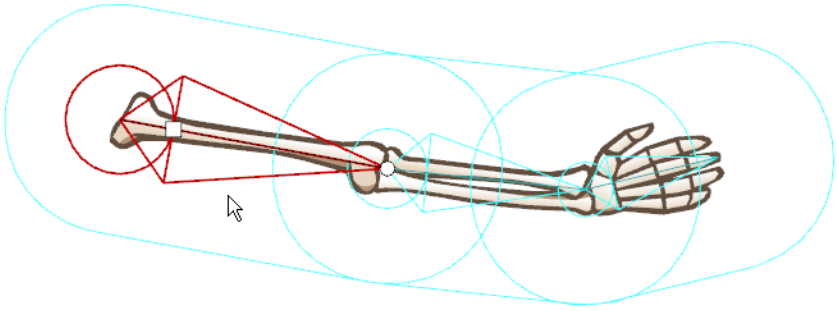
Once you start creating bones you can, at any time, modify them in Setup mode to optimize their positioning without creating an animation.

To modify bones using the Bone Setup tool:

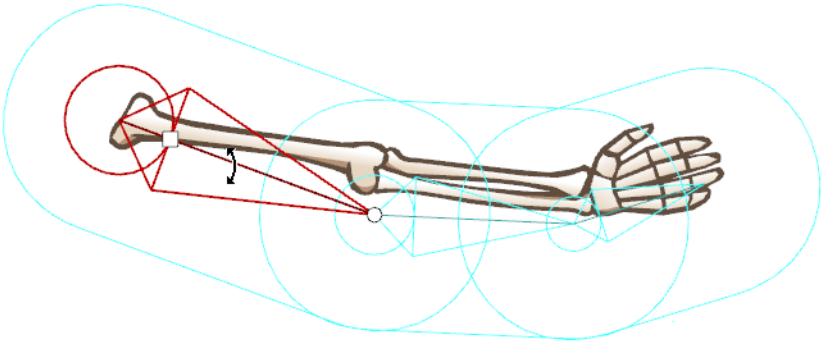
1. From the Bones Tools toolbar, select the Bone Setup tool or press [J].

2. In the Camera view, select the bone you want to modify.

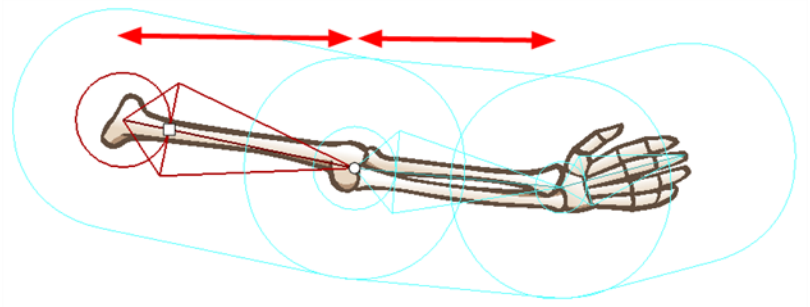
   The selected bone turns red and two control handles appear.



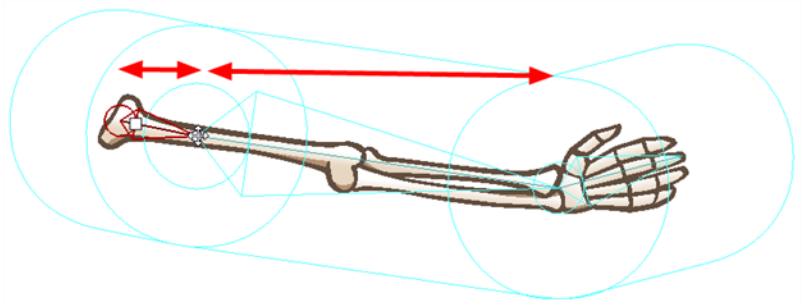
- To rotate the bone, place the pointer over the bone until you see the rotation cursor. Click and drag to rotate the selected bone. You can change the rotation angle of any bone in the chain.



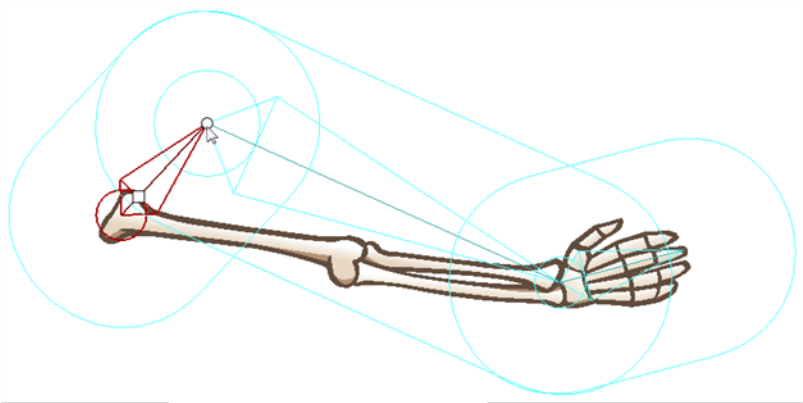
- To shorten or lengthen the bone, click on the round handle at the tip of the bone and either drag it towards or away from the root of the bone. You can lengthen or shorten any bone in your chain. You can also rotate as you scale, creating two transformations in one step.



Original bone chain



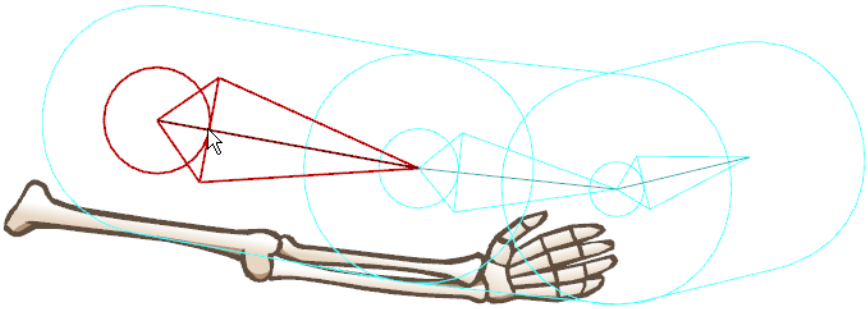
Note how the scaled bone affects the length of the bone directly connected to it, but not further down the chain



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 the square handle and drag it to the desired position.

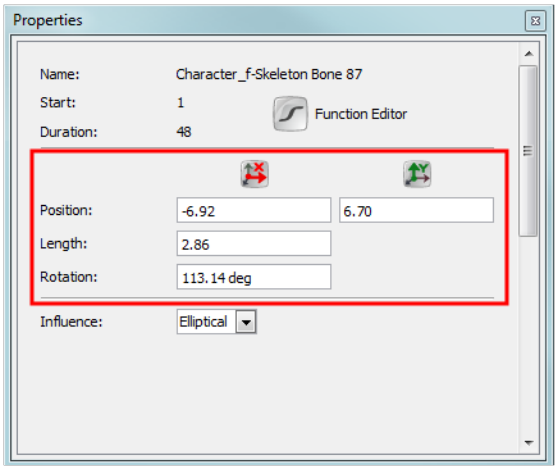
You should only reposition the first parent of the bone chain to avoid creating gaps in your joints that could result in an unwanted distortion of the art.



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 X-axis and Y-axis 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**: Lets you set the length of the selected bone. You can resize any bone from the chain.
   - **Rotation**: Lets you 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 to reset the position of other bones.

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 multiselection and reset the position of multiple bones at the same time.
2. In the Timeline View menu, select **Reset**. You can also right-click in the right or left section of the Timeline view and select **Reset**.

Setting the Influence Area

The influence area is the zone that defines which art is included in the Skeleton effect and is distorted when animated. Once you setup the bone structure, you need to adjust the influence area of your bones.

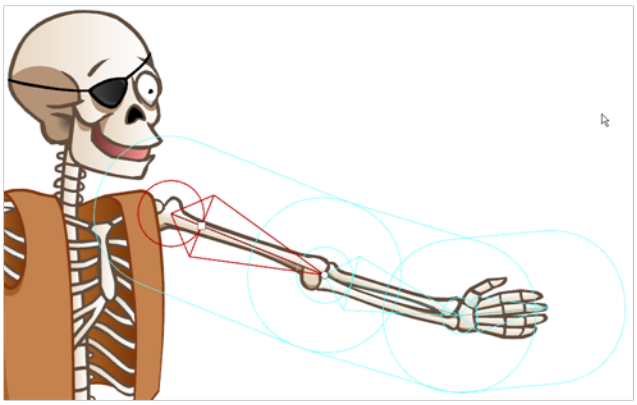
This topic is divided as follow:

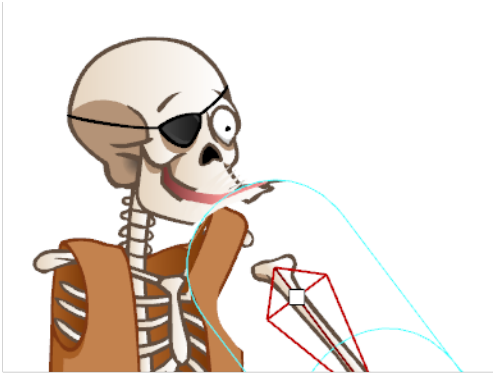
- Influence Area on the next page
- Modifying the Size and Shape of the Influence Area on page 371

Influence Area

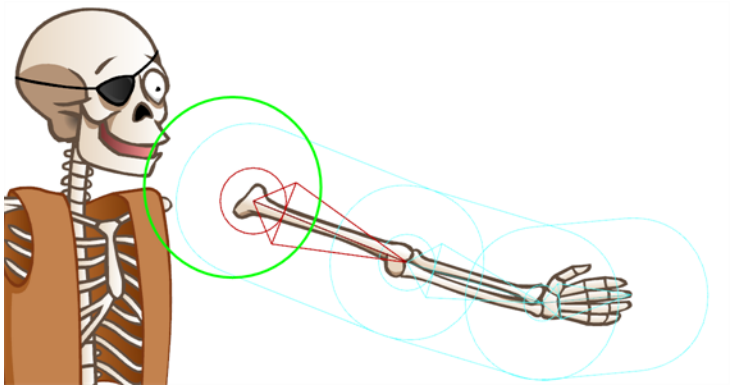
The influence area determines the boundaries of the effect that a bone will have over artwork that lies within those boundaries.

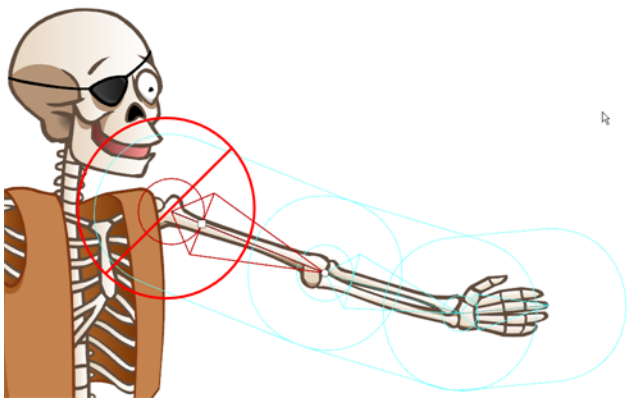
Any art on a drawing layer that is connected to the Skin Group and appears inside the bone influence area, will follow the movement of that animated bone.



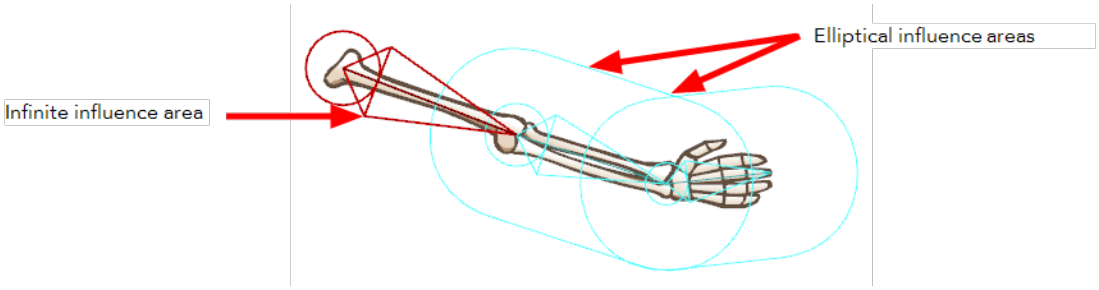


When setting the influence area around bones, make sure that no unwanted art is included in the area. Any unwanted art included in a bone influence area will follow the animated bone and become distorted.





There are two types of influence area possible for a selected bone: Elliptical and 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 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 that 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 that is situated higher in the Timeline view's layer stack, will have no influence over the overlapping area—see Modifying the Size and Shape of the Influence Area below.

Modifying the Size and Shape of the Influence Area

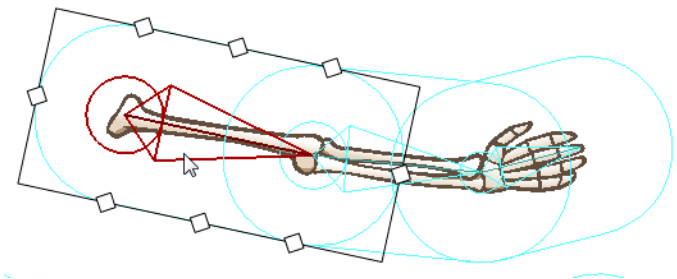
If you set the influence area of a bone to Elliptical, meaning it is bound within an ellipse shape, you can modify that shape. To modify the size and form of the ellipse, simply manipulate the square points around its bounding box.

To modify the influence area using the Bone Influence tool:

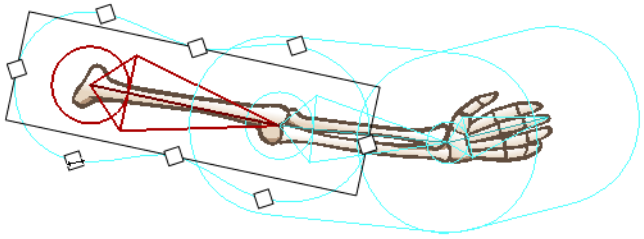
1. From the Bone Tools toolbar, select the Bone Influence tool.

2. In the Camera view, select the bone whose influence area you want to modify. Make sure that in the Properties view, the zone of influence is set to Elliptical.

   The selected bone appears in 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.



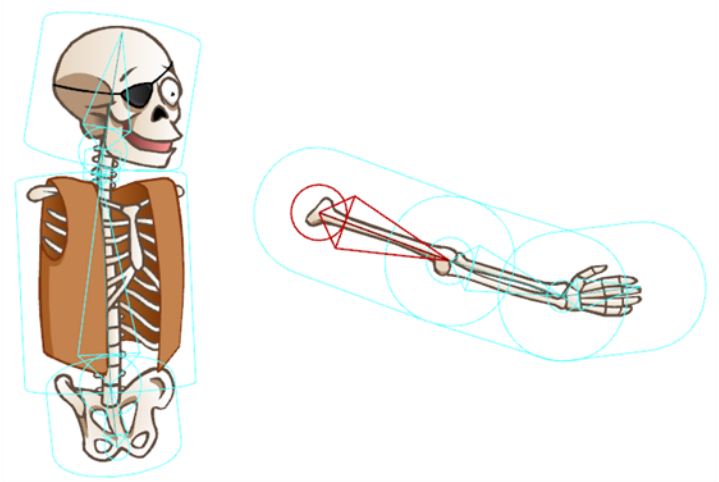
Parenting Bone Chains

Once you create 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.

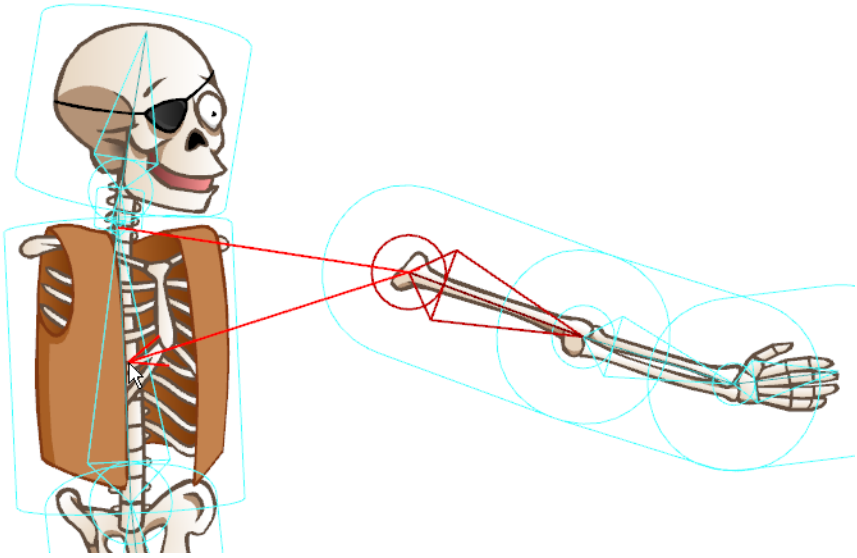
You can only parent bone chains that are connected to the same Skeleton effect. If you have seperate Skeleton effects for different limbs, you must parent them using pegs.

To parent bone chains:

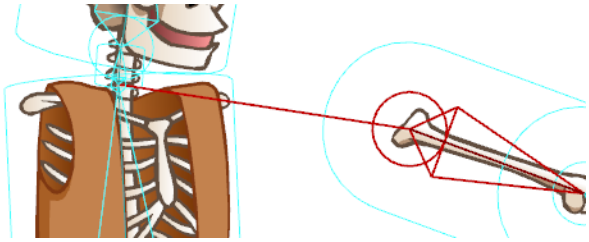
1. From the Bone Tools toolbar, select the Bone Parent tool.
2. In the Camera view, locate the bone which is the starting point of the limb you want to parent to another chain. In this example, the arm will be parented to the body of the Skeleton.



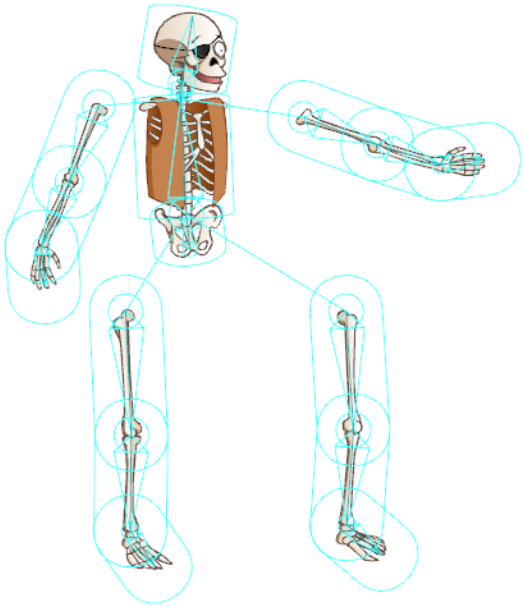
3. Click on the base of the limb bone and then drag the pointer to the bone you want to parent it to. As you drag, a red arrow points in the direction you are dragging. When a straight line appears beside it, it means that it is ready to connect to the selected bone.



4. Release the pointer to complete the connection.



5. Repeat the previous steps until all the limbs are parented to the body.



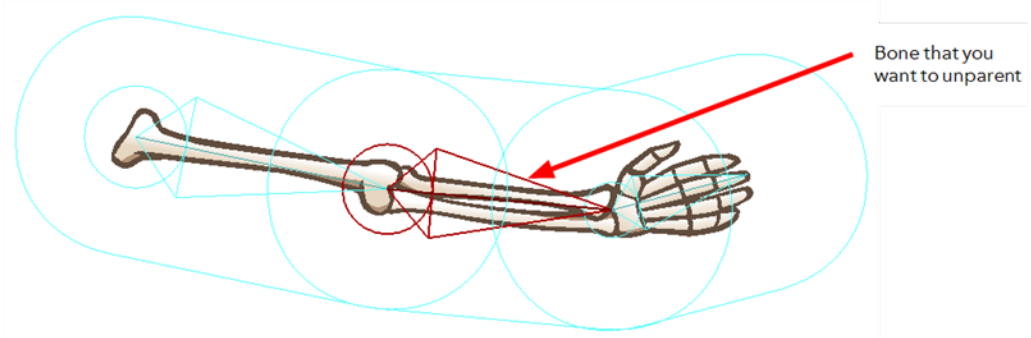
Unparenting Bone Chains

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.

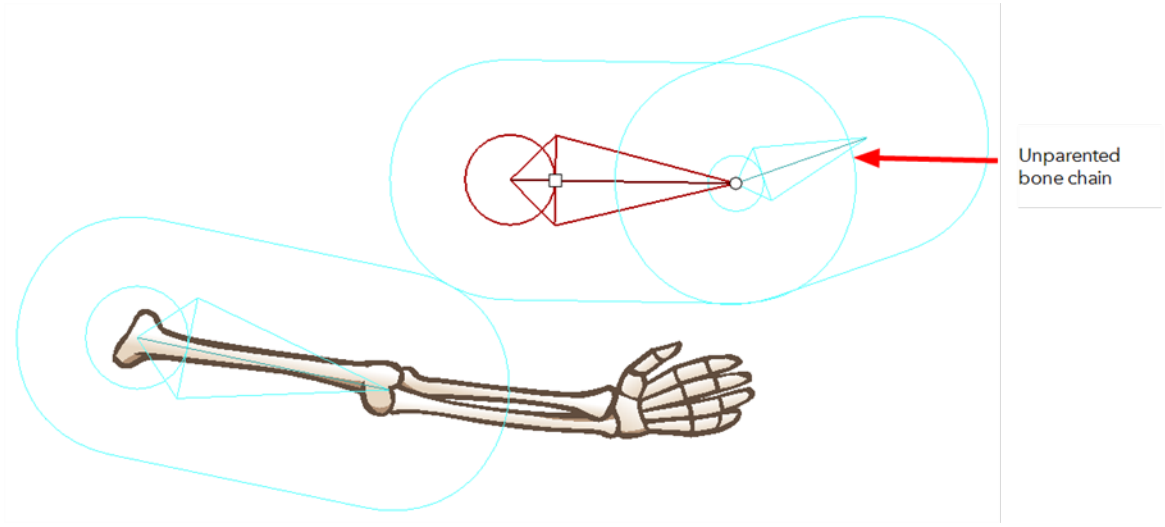
To unparent a bone or bone chain:

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. 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 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 below
- Ordering Limbs on page 378
- Hiding Bones on page 379
- Animating Bones on page 380
- Disabling a Bone Animation on page 388

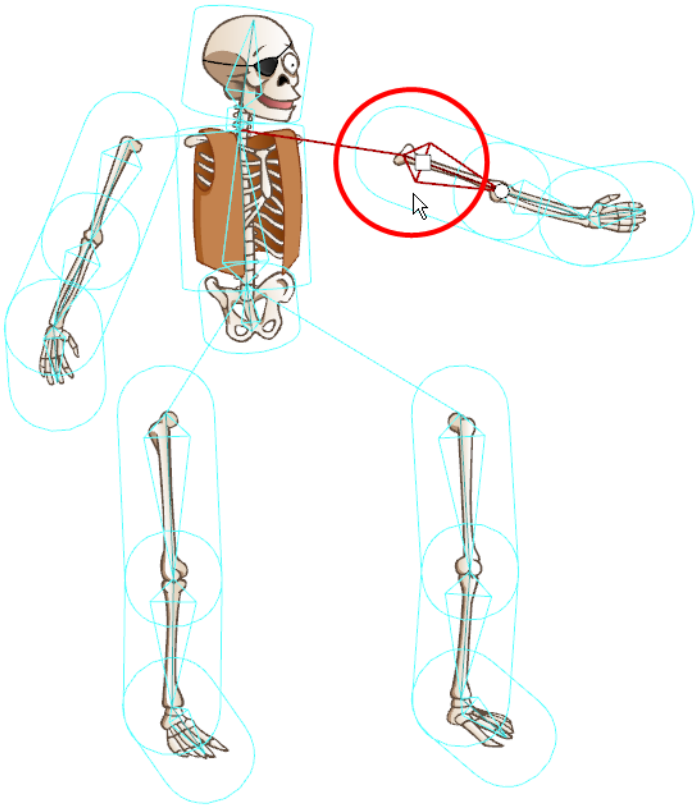
Reassembling the Character

The first step is to reassemble the character so that the limbs do not appear spread apart, as in Setup mode.

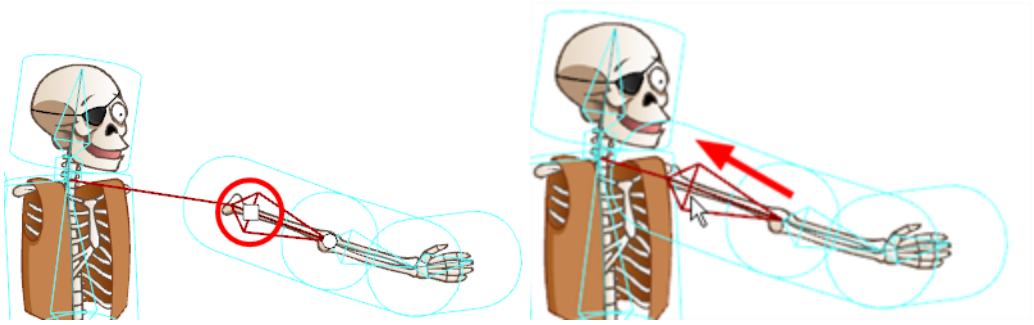
To reassemble the character:

1. From the Bone Tools toolbar, select the Bone Manipulator tool.

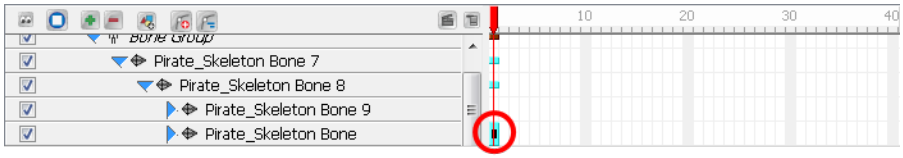
   The Camera view changes to Animation mode display.
2. In the Timeline view, make sure the red marker is at the first frame.
3. In the Camera view, select the main bone of one of the limbs.



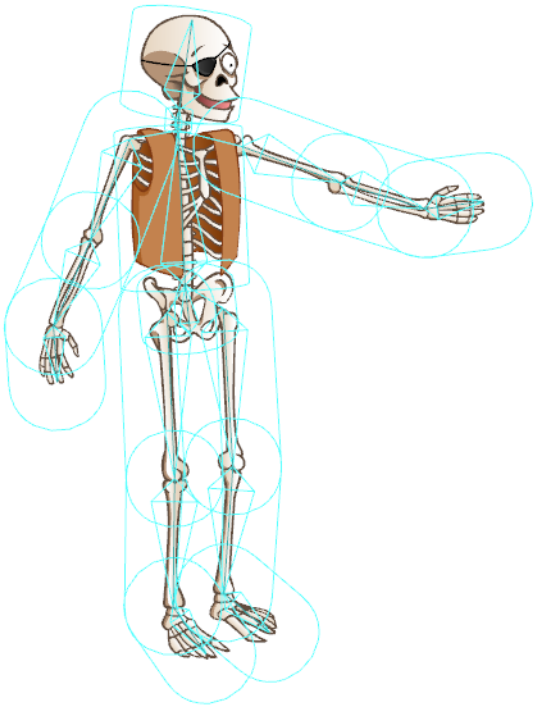
4. Use the square handle to drag the bone chain to the desired position.



A keyframe is added to the limb's bone layer on the first frame, locking its position in time.



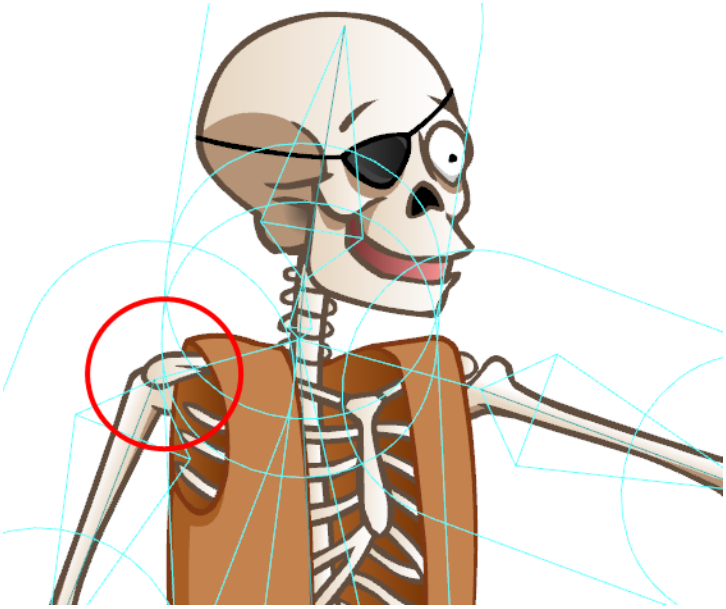
5. Repeat the previous steps for each limb you want to assemble to the body.



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—see Library on page 182.

Ordering Limbs

When reassembling your character, you might find a limb that does not appear in the correct order, such as the following arm that appears under the body.



The ordering method will differ, depending on whether your entire character is from a single drawing layer, or if your character's pieces are separated on several drawing layers.

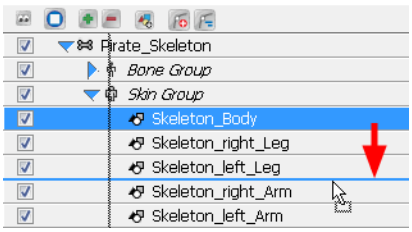
- Character with Limbs on Different Drawing Layers below
- Character on a Single Drawing Layer on the facing page

Character with Limbs on Different Drawing Layers

If your drawing layers are in the wrong order, you can easily change the order in the Timeline view within the Skin Group.

To reorder layers in the Timeline view:

1. In the Timeline view, select the layer you want to reorder.
2. Drag the layer to the correct position within the Skin Group. Be careful to drop it between layers, and not on a layer as 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—see Ordering Layers in the Timeline View on page 279.

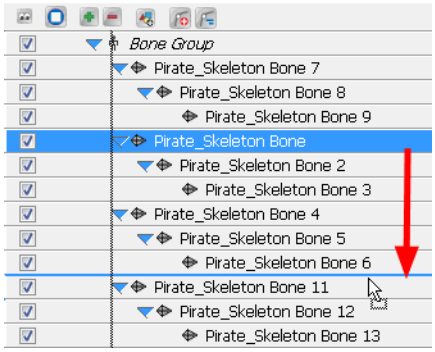
Character on a Single Drawing Layer

You cannot change the order of the limbs when they are all drawn in the same layer. If you want to have an arm pass in front of the torso and the other one behind, you should draw them on separate drawing layers and attach them to the same Skin Group. At that point, you can change the order of your layers within the Skin Group.

The ordering of the bones determines 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 want to reorder.
2. Drag the Bone element to the desired position within the Bone Group. Be careful to drop it between existing bone element hierarchies and not drop it on one as this would parent them.



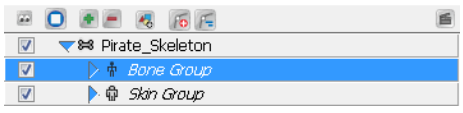
Note that the ordering of the Bone elements in the Timeline view is the opposite of the other elements. The higher the bone element is in the Timeline ordering, the further back it will appear in the Camera view.

Hiding Bones

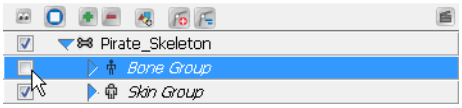
You might need to hide the bones from the Camera view. If so, you can simply hide the Bone Group.

To hide the Bone Group:

1. In the Timeline view, locate the Bone Group you want to hide.



2. Select the layer's check box to hide it.



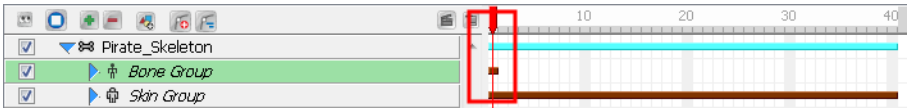
Note that hiding the Bone Group will only hide the bones and not disable the Skeleton Animation—see Disabling a Bone Animation on page 388.

Animating Bones

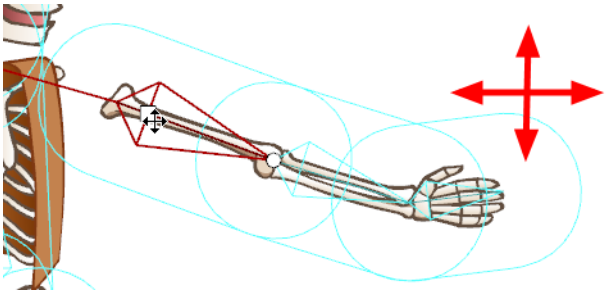
Now that the Skeleton puppet is ready, you can start animating it.

To animate bones:

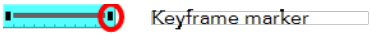
1. From the Bone Tools toolbar, select the Bone Manipulator tool.
2. In the Timeline view, go to the frame where you want to set the first pose of the puppet.



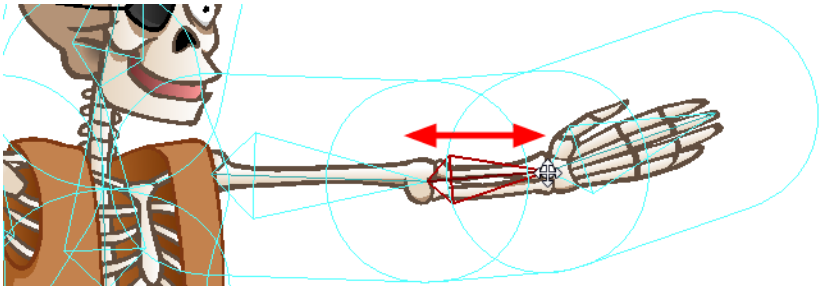
3. In the Camera view, select the bone you want to animate.
4. When a bone is selected you can:
   - Use the square handle to drag the selected bone to a new position. Note that this handle is only available on the parent bone of a chain.



Repositioning a bone will create a square black keyframe marker in the Timeline view, on the layer of the selected bone.

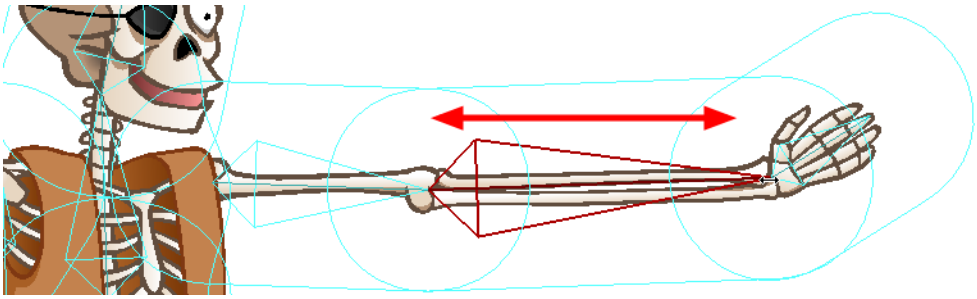


   - Use the circle handle to squash and stretch the bone. In the example below, notice how the parent bone is unaffected, but the child bone becomes squashed and stretched.

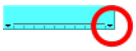


Scaling a bone with the Bone Manipulator tool will create up and down arrow-shaped keyframe markers in the Timeline view, on the layer of the selected bone, as well as on the layer of the child bone. The reason this manipulation produces the same types of keyframe markers that you would typically see for a scale and a rotation, is because the Bone Manipulator tool allows you to scale and rotate in the same movement.

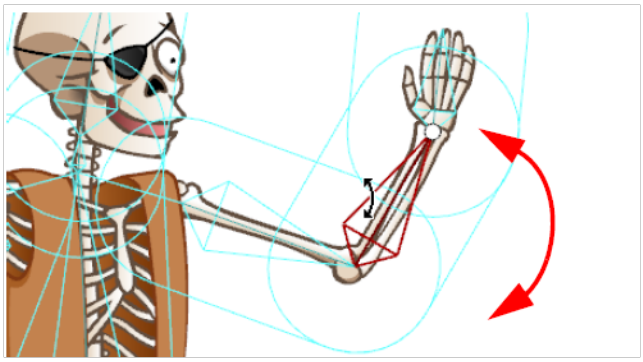
You can also use the Scale tool from the Animation tools toolbar to perform a different type of scaling. Grab the tip of the bone to squash and stretch it. In the example below, notice that the parent and child bones are unaffected by the scaling, but the child's position changes relative to the scaling of the selected bone.



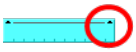
Scaling a bone with the Scale tool will create a down arrow keyframe marker in the Timeline view, on the layer of the selected bone.



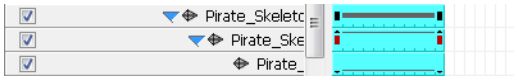
- With the Bone Manipulator tool, click directly on the bone and drag the cursor to rotate it.



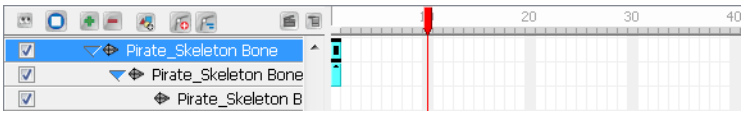
Rotating a bone will create a tiny up arrow keyframe marker in the Timeline view, on the layer of the selected bone.



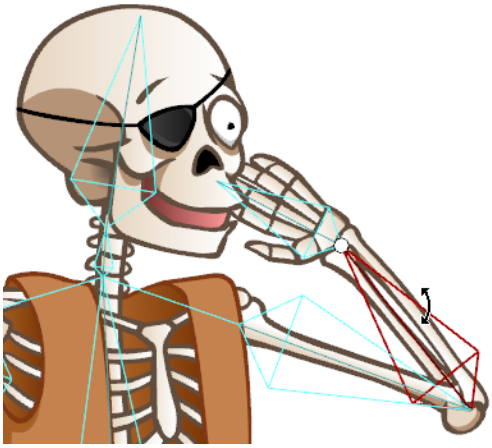
- If the Skeleton Effect is collapsed, note that you will not see the keyframe marker. If you expand the puppet's elements by clicking on the arrow next to the master peg element, notice a red square on the parent element of the bone you moved. This indicates that a child of this bone has a keyframe.



5. In the Timeline view, go to the frame where you want to set a second keyframe.



6. In the Camera view, animate the character.



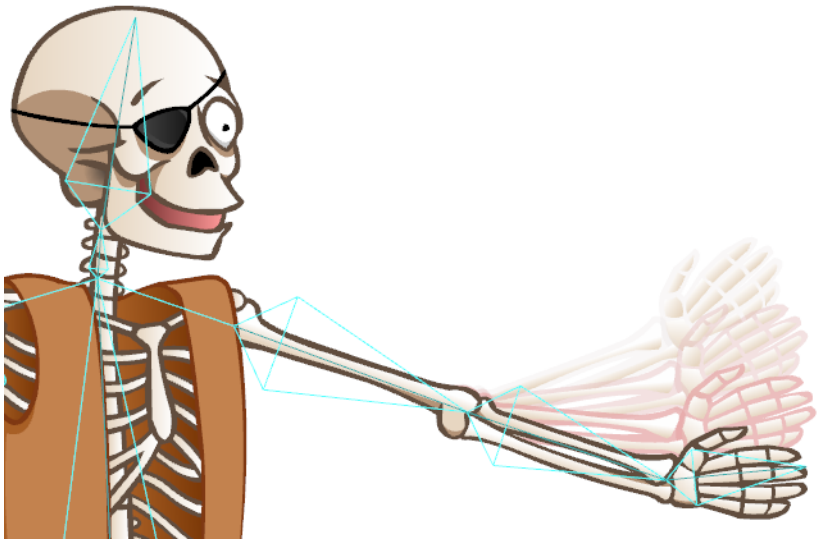
7. Repeat this process until all the poses are done.

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 be very handy when animating your skeleton puppet. If in some situations you would rather create each keyframe in the

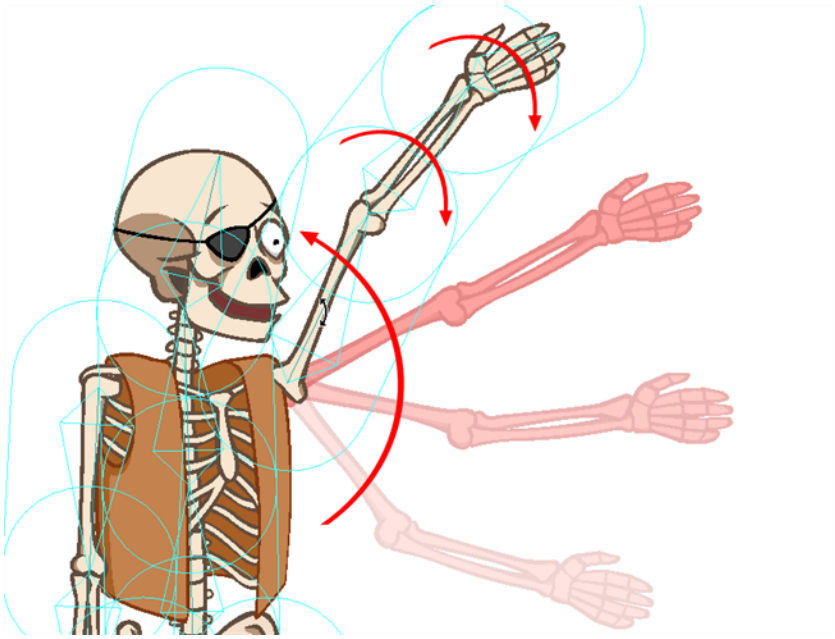
interpolation of your movement, you can set your keyframe to be non-constant—see Constant and Non-Constant Segments on page 403

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—see Using the Onion Skin in Cut-out Animation on page 415



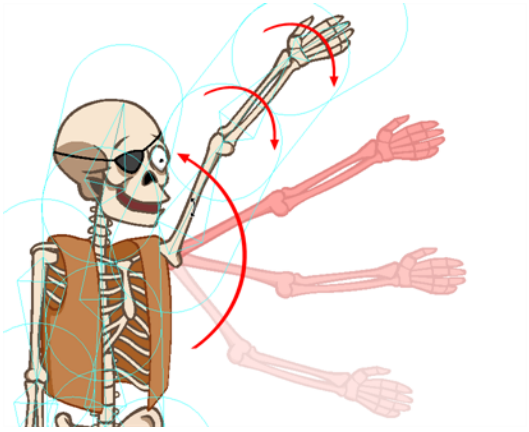
Natural Movement



Using the Natural Movement tools, you can easily animate smooth and natural actions. The Natural Movement Forward and Natural Movement Inverse tools let you to rotate the parent bone and the rest of the children in the chain will follow the main movement and also rotate on their own to create fluid motions. Without these little additional rotations, the movement can be stiff and you will have to rotate the children bones on your own to smooth out the movement and make it flow naturally.

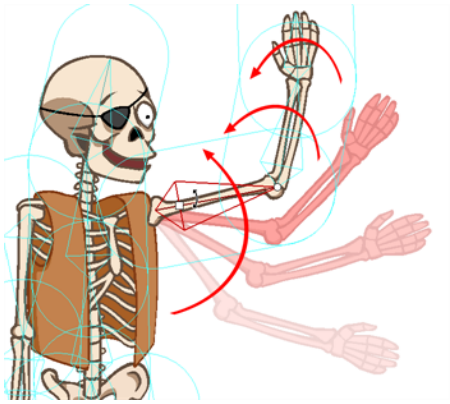
There are two natural movement tools:

- **Natural Movement Inverse**



The Natural Movement Inverse tool rotates the children bones in the opposite direction from the parent. Therefore, if you rotate the upper arm of a character upward, the forearm and hand also rotate downward.This provides an illusion resistance in the motion as if gravity or air pressure were delaying the rotation of the limbs. This animation principle is called *follow through*. If you animate a flower bending in the wind, you will use the Natural Movement Inverse tool.

- **Natural Movement Forward**



The Natural Movement Forward tool rotates the children bones in the same direction as the parent.

Therefore, if you rotate the upper arm of a character upward, the forearm and hand also rotate upward. There is no illusion of resistance in this motion. The arm is deliberately bending.

To use the Natural Movement Inverse and Forward:

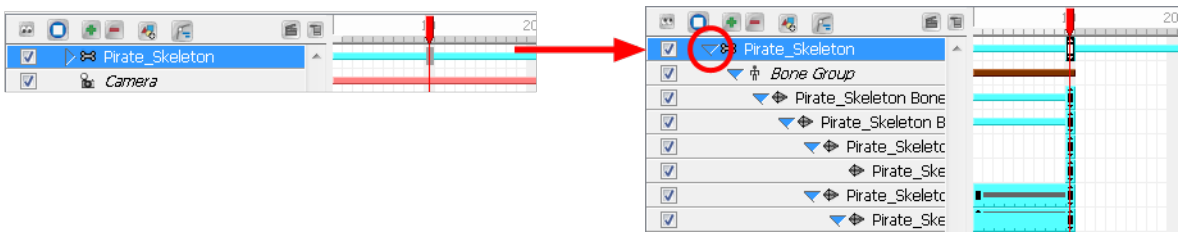
1. In the Bones Tools toolbar, select the Natural Movement Forward or Natural Movement Inverse tool. You can also access these tools by selecting **Tools > Bone Tools > Natural Movement Forward** or **Natural Movement Inverse**.
2. In the Camera view, click the bone you want to animate and rotate it.
3. To toggle between the Natural Movement Forward and Natural Movement Inverse, hold down [Alt] before you start the motion to select the opposite tool.

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. Make sure your Skeleton Effect layer is collapsed.
2. In the Timeline view, on the Skeleton Effect layer, select the frame at which you want to block the puppet's position.
3. Select **Element > Peg > Add Keyframe** or press [I]. If you expand the Skeleton effect after adding the keyframe, a keyframe will be added to all children layers. Do not forget to collapse your Skeleton effect before continuing your animation.



Deleting Keyframes

To delete keyframes:

1. In the Timeline view, select the keyframe you want to remove.
2. Select **Element > Peg > Remove Keyframe** or press [Ctrl] + [R] (Windows) or [⌘] + [R] (Mac OS X).

   The selected keyframe is 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 want to remove all the keyframes from. You can select many elements at once.
2. In the Timeline View menu, select **Remove All Keyframes** or right-click in the right side of the Timeline view, and select **Remove All Keyframes**.

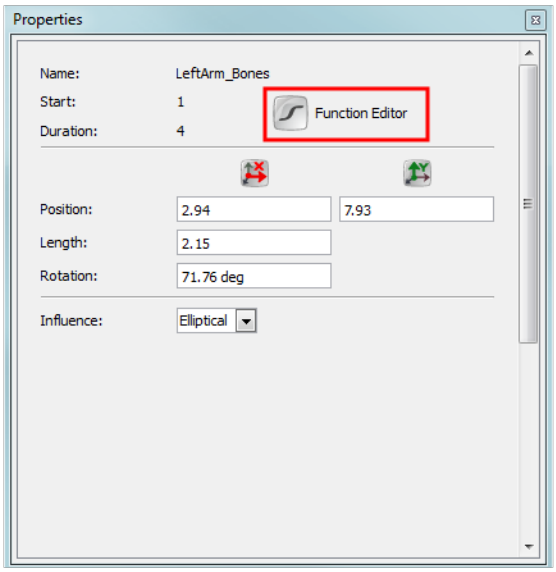
Adjusting the Velocity and Functions

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.

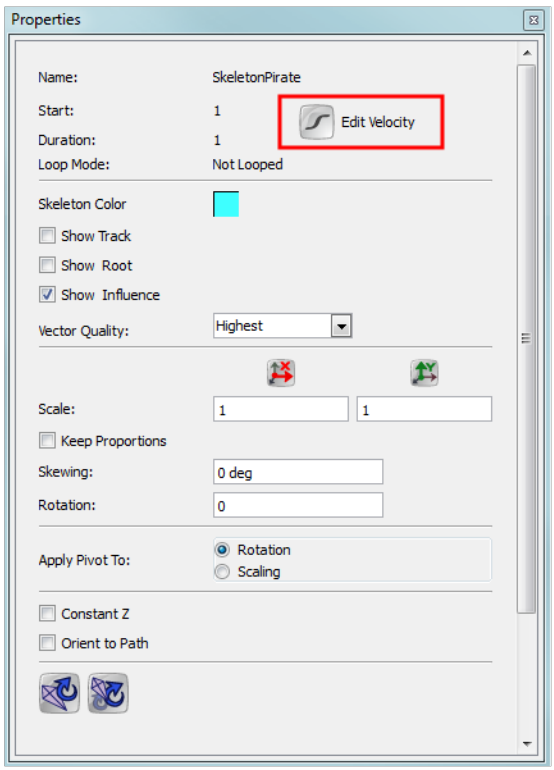
To display the selected bone or skeleton in the Function Editor view:

1. In the Timeline view, select the Skeleton Effect master element or the bone element whose velocity you want to edit.
2. In the Properties view, click the Function Editor or Edit Velocity button.

Bone Element



Skelecton Element



The Function Editor view is displayed and the select bone or skeleton function is selected.

To learn how to adjust the velocity and functions, see:

- Adjusting the Velocity on page 411
- Function Editor View on page 322

To learn more about the Skeleton Effect Properties view options, see:

- Skeleton Effect Properties on page 389

To learn more about the Bone element Properties view options, see:

- Setting Up the Bones on page 366
- Setting the Influence Area on page 369

Disabling a Bone Animation

At times, you may need to disable the bone animation. If so, you can 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. Select in the layer's check box to disable it.

Notice that the Camera view automatically switches to Setup mode display.

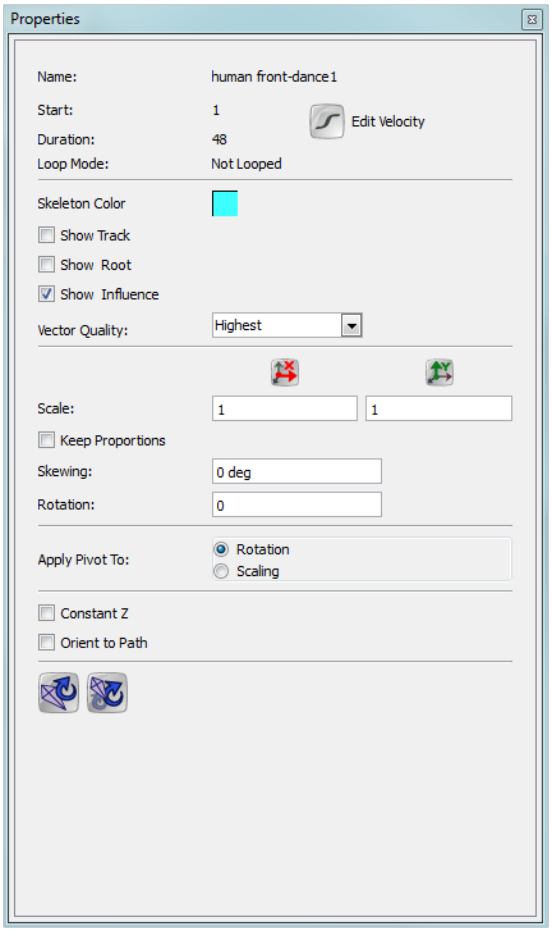
Skeleton Effect Properties

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, see Setting the Scene on page 277.

You can animate this element using the animation tools available in the Animation Tools toolbar—see Using the Different Animation Tools on page 407.



- **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—see Change Loops on page 332 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—see Adjusting the Velocity and Functions on page 387 and Adjusting the Velocity on page 411
- **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—see Refer to Preferences on page 392.
- **Show Track**: Displays the motion path of your animation in the Camera view—see Pegs on page 305.
- **Show Root**: Displays 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 enabled, letting 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

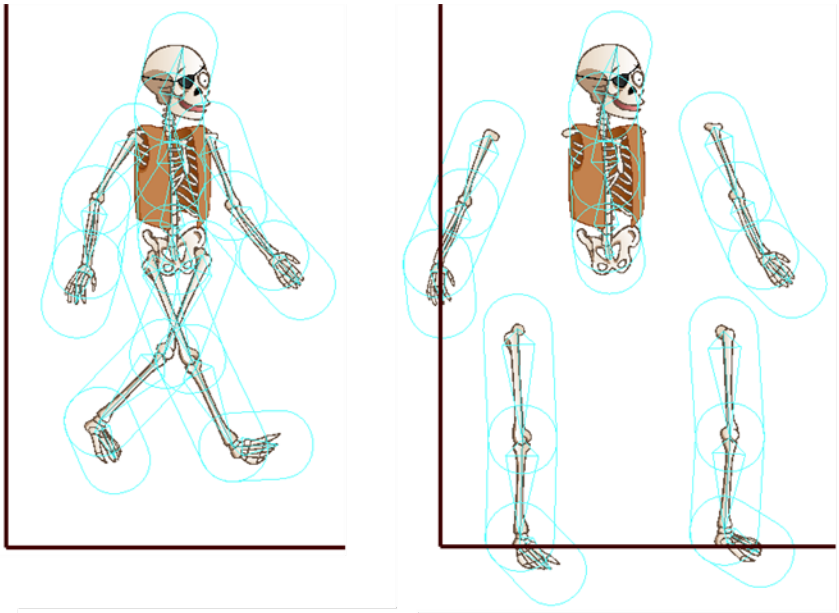
- **Scale**: Type in the desired width and height scaling values: 1 = 100%. You can also use the Scale tool in the Animation Tools toolbar.
- **Keep Proportions**: Enable this option to keep proportions when scaling the skeleton.
- **Skewing**: Type in the desired skewing angle value. You can also use the Skew tool from the Animation Tools toolbar.
- **Rotation**: Type in the desired rotation angle value. You can also use the Rotate tool from the Animation 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. When you create a motion path on 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 keeps the Z-axis value as constant—see Pegs on page 305
- **Orient to Path**: Forces the element connected to the path to follow the motion path—see Pegs on page 305

- **Copy Resting Position to Current Frame**: Brings the skeleton and artwork back to the set-up position only on the currently selected frame. You can then reparent and set up the bones and their corresponding artwork in a new formation.
- **Copy Resting Position to All Key Frames**: Maintains 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.



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

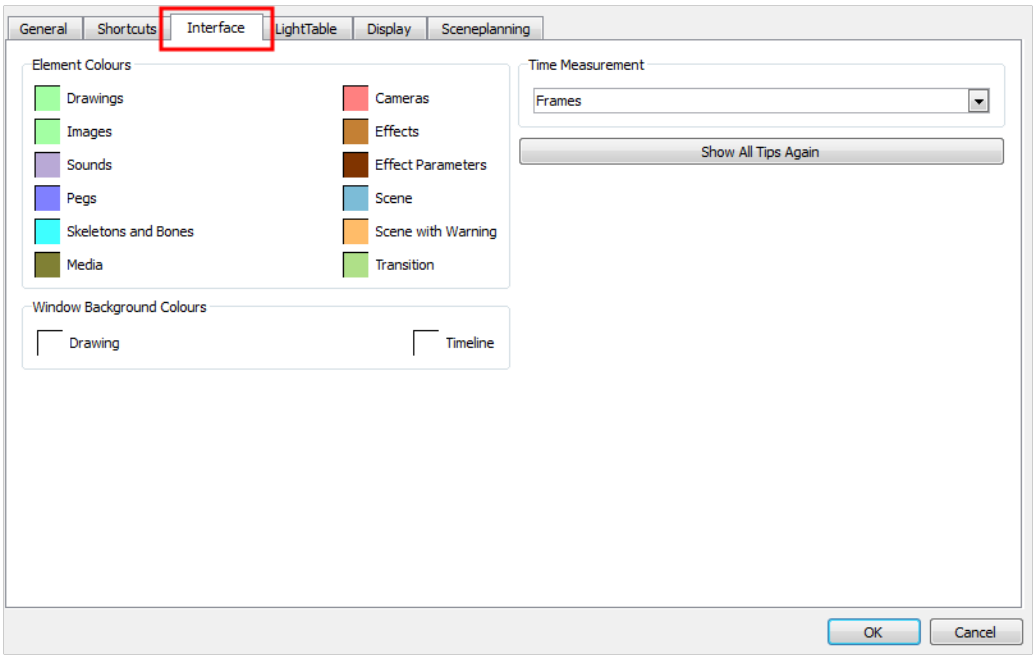
When working with the bones feature, you can set the colour preference of the bone display from the Preferences panel.

To open the Preferences panel:

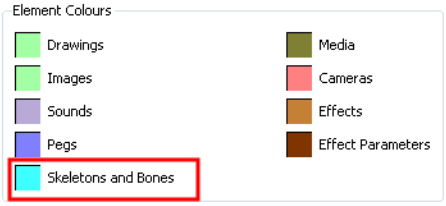
- Windows: Select **Edit > Preferences**.
- Mac OS X: Select **Toon Boom Studio 8.1 > Preferences.**

To change the bones colour display:

1. In the Preferences panel, select the **Interface** tab.



2. In the Element Colours section, double-click on the **Skeletons and Bones** colour swatch to display the Select Colour dialog box.



3. Pick a colour in the Select Colour dialog box and click OK.
4. In the Preferences panel, click OK.
5. Every new Skeleton Effect you create uses 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—see Skeleton Effect Properties on page 389.

Chapter 13: 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:

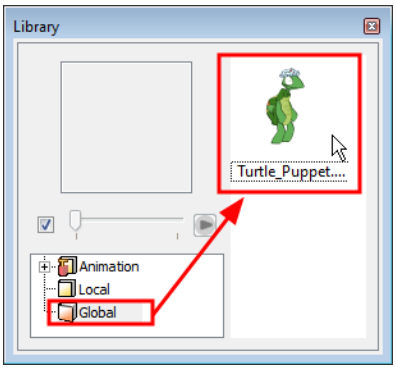
- Getting the Character From the Library on the next page
- Understanding Keyframes and Drawings on page 399
- Creating a Simple Cut-out Animation on page 400
- Preferences on page 418

Getting the Character From the Library

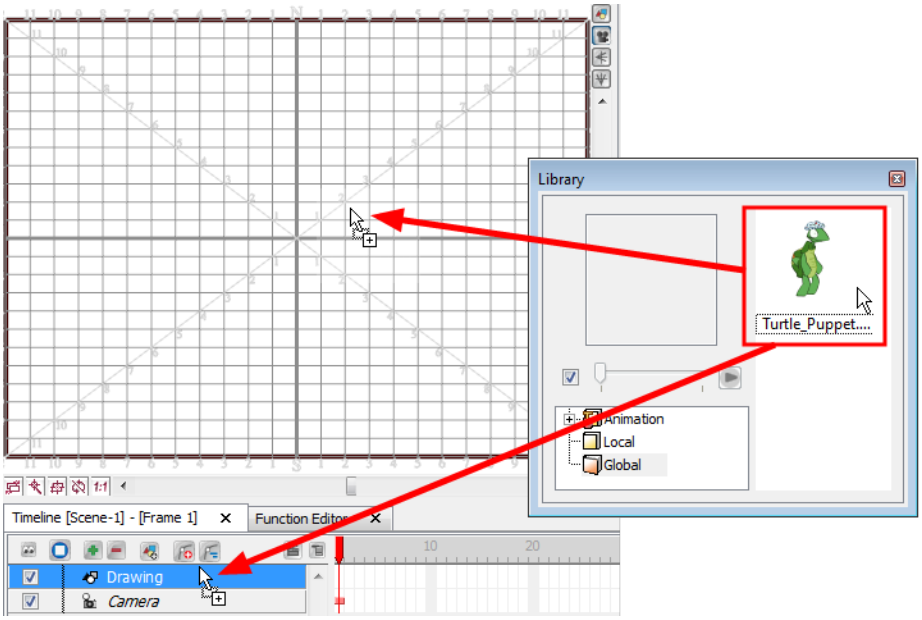
To use a character that was previously created and stored in the Library, you need to import it into your scene.

To import your character from the library:

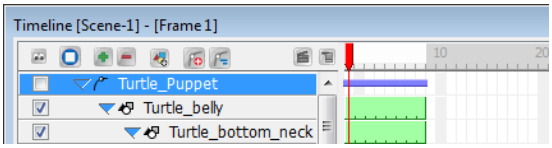
1. Create your new Toon Boom Studio project—see Creating and Opening a Project on page 34.
2. In the Library view, select the template of the character you want to animate.



3. Drag the selected template to the Camera or Timeline view's left side.



The puppet appears in the Timeline view.



Refer to Animating a Puppet on the previous page to learn more about the Library view.

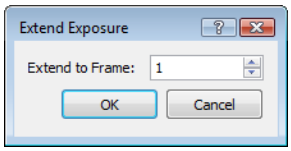
Extending the Exposure

To extend the puppet exposure:

1. In the Timeline view, click 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 press [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 OK. This extends the exposure of every element contained in your puppet.

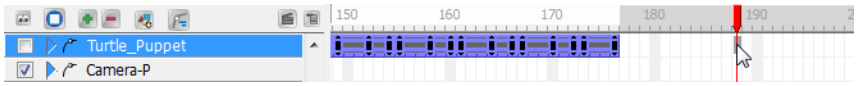
Refer to Traditional Digital Animation on page 233 to learn more about exposure and timing.

Extending the Exposure of a Peg's Children Layers

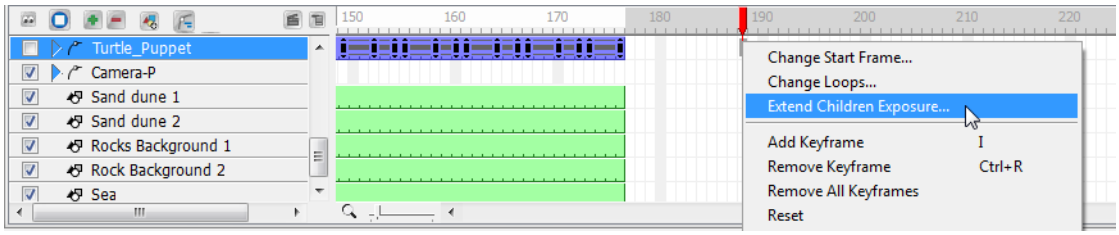
When several layers such as drawings and pegs are parented to another layer such as a peg, you have the possibility to expand the exposure of all parented layers at once by collapsing the main layer and using the Extend Children Exposure function.

To extend the exposure of a puppet's children layers:

1. In the Timeline view, in the puppet layer's row, select the frame to where you would like to extend all the layers' exposure. Make sure the main layer is collapsed.

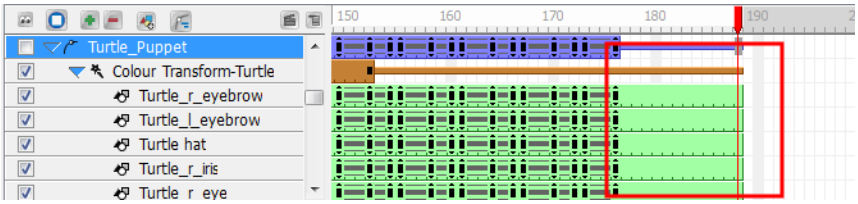


2. Right-click on the frame and select **Extend Children Exposure**.



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

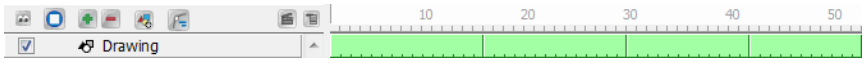
Before starting to animate it is important to understand the difference between drawings and keyframes.

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.

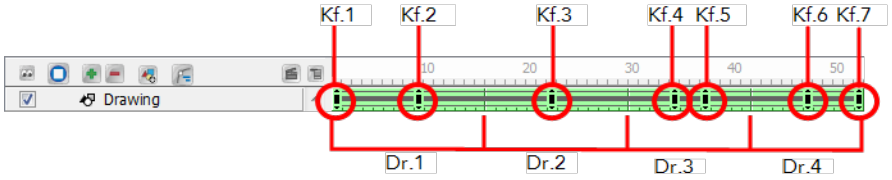
Keyframes and Drawing Blocks

In the Timeline view, if you extend the exposure of a drawing, it is 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, just 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 below
- Constant and Non-Constant Segments on page 403
- Navigating Inside a Hierarchy on page 404
- Using the Different Animation Tools on page 407
- Adjusting the Velocity on page 411
- Using the Onion Skin in Cut-out Animation on page 415
- Swapping Images on page 416

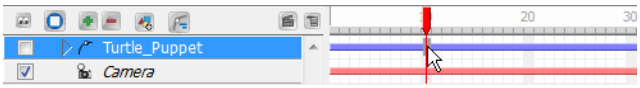
Animating the Parts

Once you import your cut-out puppet into your Studio project, you can start animating it.

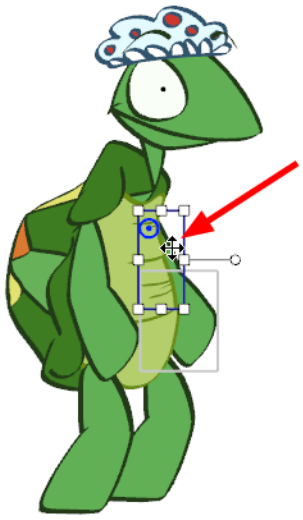
To animate a puppet:

1. In the Animation Tools toolbar, select the **Transform** tool or select

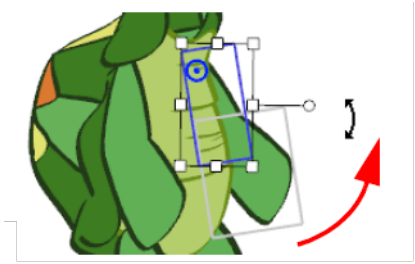
   Tools > Animation Tools > Transform or press [7].
2. In the Timeline view, go to the frame where you want to set the first pose of your puppet.



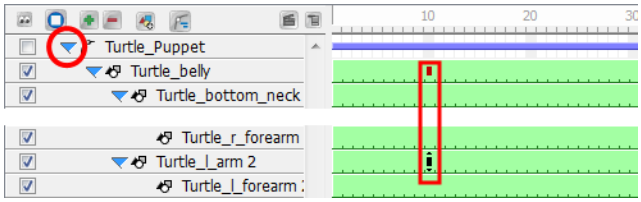
3. In the Camera or Timeline view, select the parts to animate.
   - If your puppet is collapsed, click the top layer arrow to expand it.



4. Use the Transform tool to rotate, skew, scale or translate the selection to its new position.



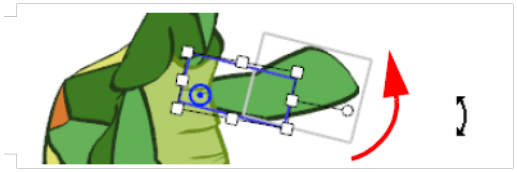
A keyframe is created in the Timeline view. If your puppet is collapsed, note that you do not see the keyframe on the master peg layer.



- If you expand the elements of your puppet by clicking 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 a second keyframe.

6. In the Camera view, animate your character.

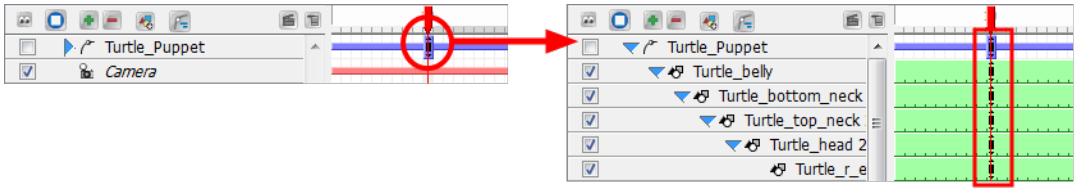


Blocking the Body's Position

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, on the master peg, select the frame at which you want to block your puppet's position.
2. Select **Element > Peg > Add Keyframe** or press [I].



Deleting Keyframes

To delete keyframes:

1. In the Timeline view, select the keyframe you want to remove.
2. Select **Element > Peg > Remove Keyframe** or press [Ctrl] + [R] (Windows) or [⌘] + [R] (Mac OS X).

   The selected keyframe is deleted.

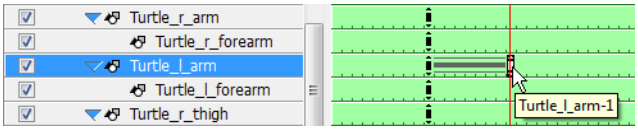
If you select a keyframe on a collapsed layer, all the keyframes for all of that frame's collapsed elements are removed.

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 need to use the Paste Special command.

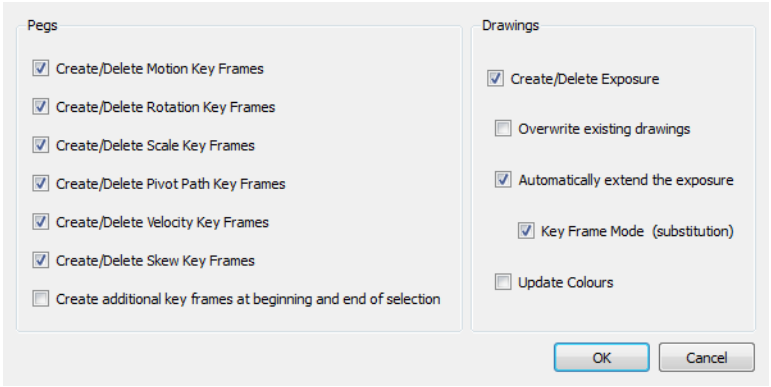
To copy and paste keyframes:

1. In the Timeline view, select the keyframe that contains the position values you want to copy.



2. Select **Edit > Copy Cell** or press [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** or press [Ctrl] + [B] (Windows) or [⌘] + [B] (Mac OS X).

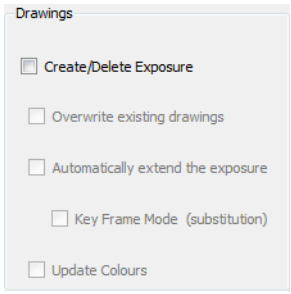
   The Timeline Paste Special Preferences dialog box opens.



5. In the Pegs section, select or deselect the following options to choose which values of the keyframe you want to paste:
   - **Create/Delete Motion Key Frames**: Pastes the translation value of the copied keyframe.
   - **Create/Delete Rotation Key Frames**: Pastes the rotation value of the copied keyframe.
   - **Create/Delete Scale Key Frames**: Pastes the scale value of the copied keyframe.
   - **Create/Delete Pivot Key Frames**: Pastes the pivot position value of the copied keyframe.
   - **Create/Delete Velocity Key Frames**: Pastes the velocity value of the copied keyframe.

- **Create/Delete Skew Key Frames**: Pastes the skew value of the copied keyframe.
- **Create additional key frames at beginning and end of selection**: Creates 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, deselect the **Create/Delete Exposure** option. If this option is selected, the drawing exposure is copied at the same time as the position value.



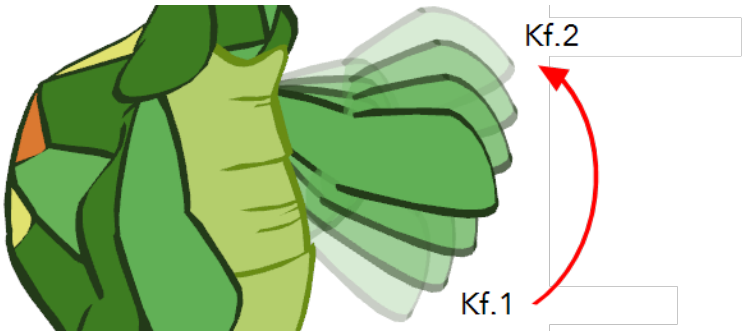
Constant and Non-Constant Segments

By default, when you add keyframes, non-constant segments are created between them. You can change this option to create constant segments.

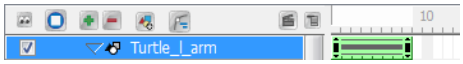
Refer to the Preferences topic to learn how you can change the default behaviour of Toon Boom Studio so it creates constant segments by default.

Non-Constant Segment

A non-constant segment means that Toon Boom Studio automatically creates the interpolation between the two keyframes, creating a motion.

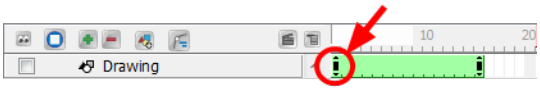


A non-constant segment is represented as grey lines going from one keyframe to the other.



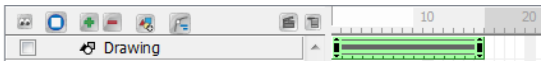
To switch from a constant to a non-constant segment:

1. In the Timeline view, select the first keyframe of the constant segment you wish to turn to non-constant.



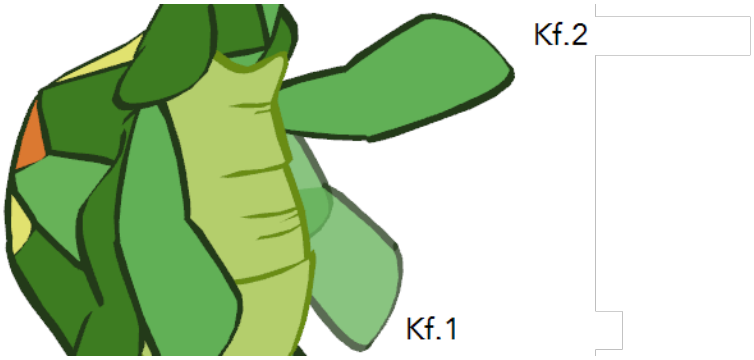
2. Select **Element > Peg > Set Non-Constant Segment** or press [Ctrl] + [Shift] + [L] (Windows) or [⌘] + [Shift] + [L] (Mac OS X).

   The segment turns to a non-constant segment.

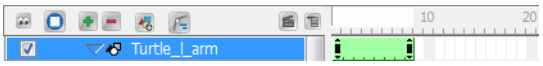


Constant Segment

A constant segment means that the drawing automatically jumps from one position to the other without creating any motion in between.



A constant segment is represented as a blank gap between two keyframes.

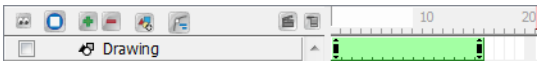


To switch from a non-constant to a constant segment:

1. In the Timeline view, select the first keyframe of the non-constant segment you want to turn to constant.

2. Select **Element > Peg > Set Constant Segment** or press [Ctrl] + [L] (Windows) or [⌘] + [L] (Mac OS X).

   The segment turns to a constant segment.

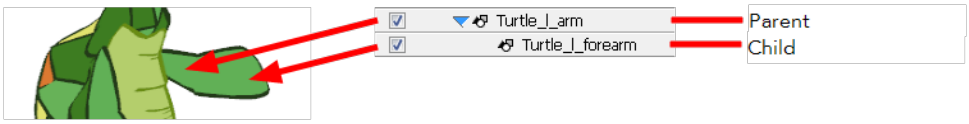


Navigating Inside a Hierarchy

To create a layer hierarchy when you build your puppet, use the hierarchy navigation command 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.

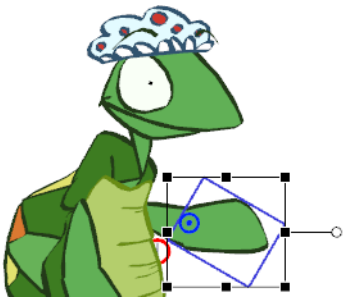
Selecting a Parent or Child Element

In a hierarchy, elements connected to one another are called *parent* and *child*.



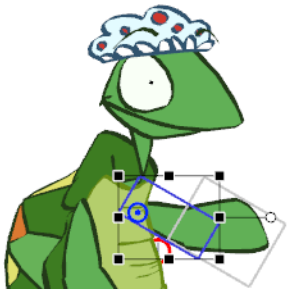
To select the parent or child element:

1. In the Animation Tools toolbar, select the Transform tool, select **Tools > Animation Tools > Transform** or press [7].
2. In the Camera or Timeline view, select an element that is attached to a hierarchy.

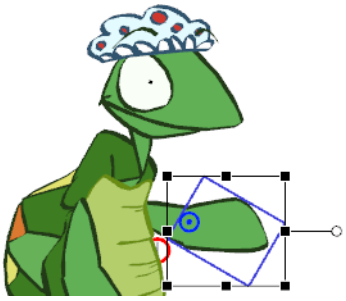


3. Select **Element > Arrange > Select Parent**.

   The selection changes to the parent of the selected element.



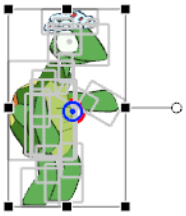
4. Once a parent peg is selected, select **Element > Arrange > Select Child** to select its child.



To select all children of an element:

1. In the Animation Tools toolbar, select the Transform tool, select **Tools > Animation Tools > Transform** or press [7].

2. In the Camera or Timeline view, select an element which is part of a hierarchy and is a parent of other elements.

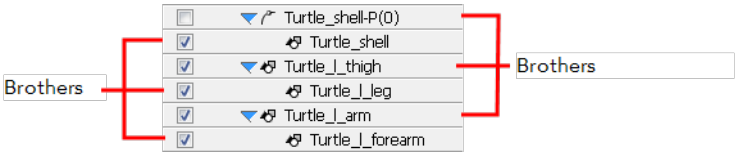


3. Select **Element > Arrange > Select Children**.

   The selection changes to select all the elements that are attached to the selected parent element.

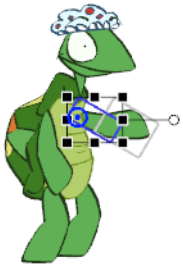
Selecting Brother Elements

Elements that are on the same hierarchy level are called brothers.



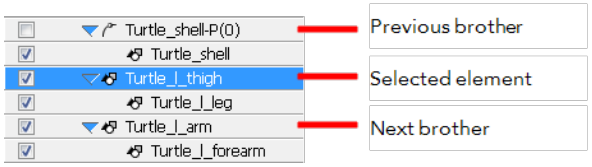
To select previous and next brother:

1. In the Animation Tools toolbar, select the Transform tool, select **Tools > Animation Tools > Transform** or press [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 option selects 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 Animation 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**

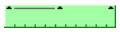
  Creates a keyframe for motion, scale, rotation and skew values at once.

- **Motion Tool**

  Creates a keyframe for the position values only.

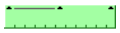
- **Rotate Tool**

  Creates a keyframe for the angle values only.

- **Skew Tool**

  Creates a keyframe for the skew values only.

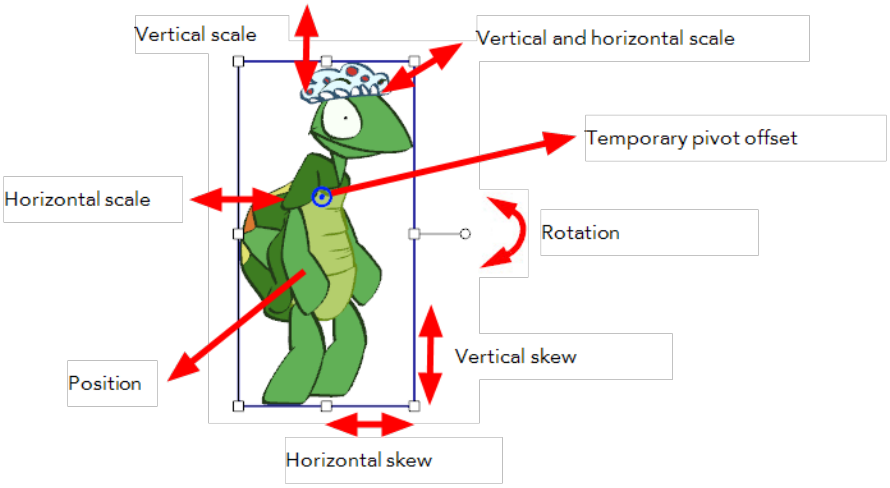
  

- **Scale Tool**

  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:

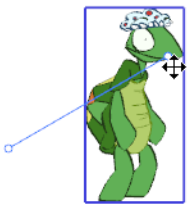
1. In the AnimationTools toolbar, select the Transform tool, select **Tools > AnimationTools > Transform** or press [7].
2. In the Camera or Timeline view, select the element you want to transform.
3. Use one of the bounding box handles to transform your element.
   - Hold down the [Shift] key as you scale to keep the ratio when using the corner handles.
   - Holding down the [Shift] key as you rotate, locks the rotation every 15 degrees.

Using the Motion Tool

Use the Motion tool to create a keyframe for the position value.

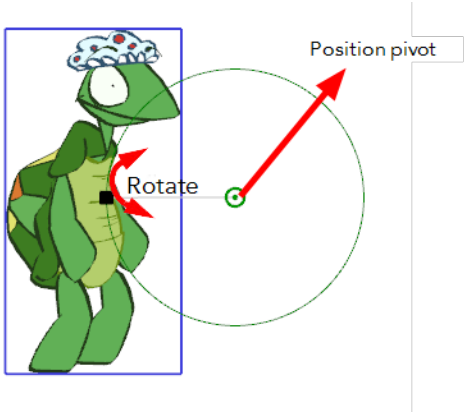
To use the Motion tool:

1. In the AnimationTools toolbar, select the Motion tool, select **Tools > Animation Tools > Motion** or press [0].
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

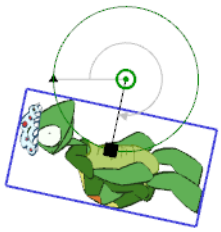
Use the Rotate tool to create a keyframe for the rotation angle value.



To use the Rotate tool:

1. In the AnimationTools toolbar, select the Rotate tool or select **Tools > Animation Tools > Rotate**.
2. In the Camera or Timeline view, select the element you want to rotate.
3. Use the rotation handle to rotate your element.

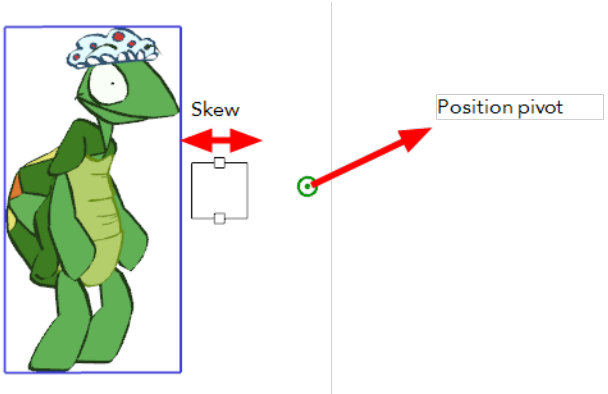
   As you rotate your element an angle guide appears, displaying the rotation angle you are creating.



- Holding down the [Shift] key as you rotate, locks the rotation every 15 degrees.

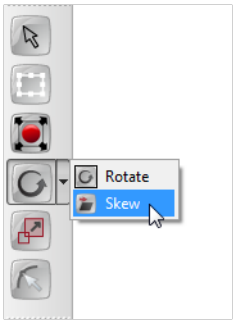
Using the Skew Tool

Use the Skew tool to create a keyframe for the skew value.

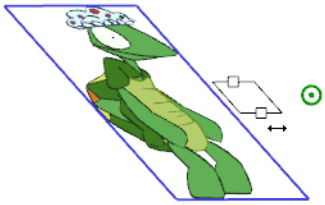


To use the Skew tool:

1. In the Animation Tools toolbar, select the Skew tool or select **Tools > Animation Tools > Skew**.

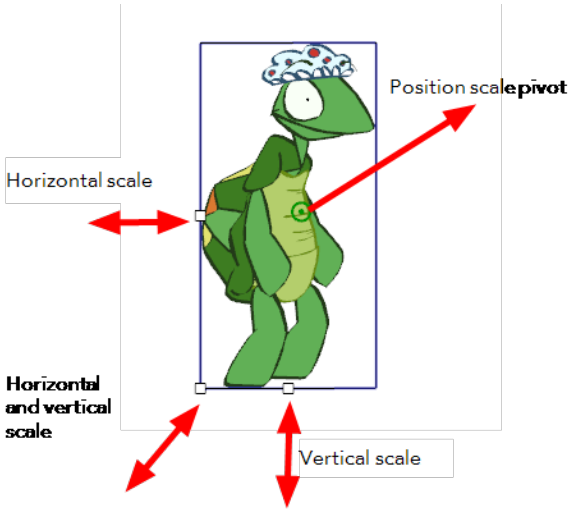


2. In the Camera or Timeline view, select the element you want to skew.
3. Use the handles to skew your element.



Using the Scale Tool

Use the Scale tool to create a keyframe for the scaling value.

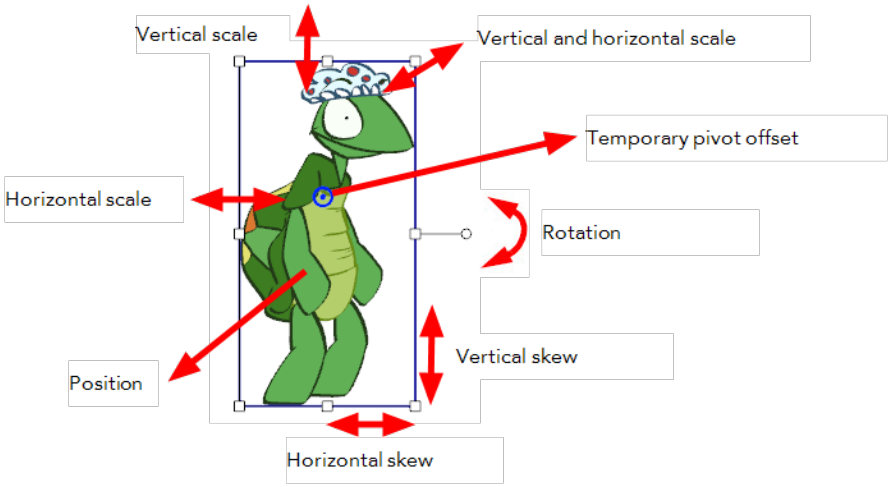


To use the Scale tool:

1. In the Animation Tools toolbar, select the Scale tool, select **Tools > Animation Tools > Scale** or press [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.

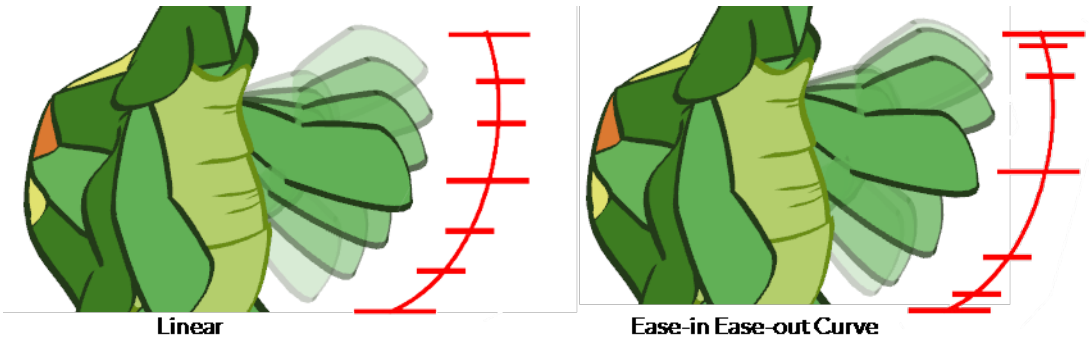


To use the Select tool:

1. In the Animation Tools toolbar, select the Select tool, select **Tools > Animation Tools > Select** or press [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.

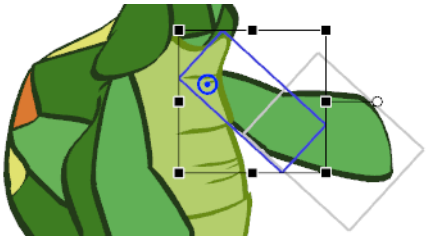


Ease-in and ease-out is the acceleration and deceleration of the movement. The speed of the motion is adjusted between two keyframes so that the movement starts slowly, speeds up and then slows

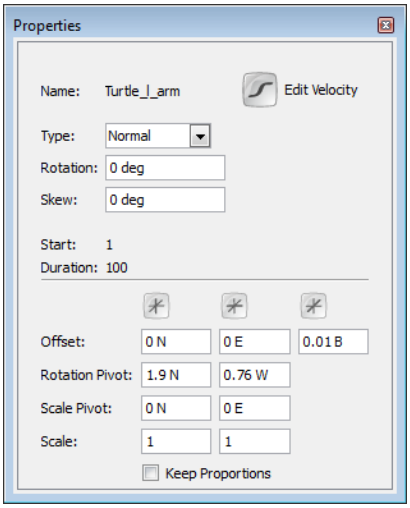
down again as it reaches the second keyframe. Adjusting the velocity creates a more natural feel to the movement.

To adjust the velocity of a movement:

1. In the Animation Tools toolbar, select one of the animation tools, select **Tools > Animation Tools >** the desired tool, or use the desired tool keyboard shortcut.
2. In the Camera or Timeline view, select the animated element of which you want to adjust the velocity.



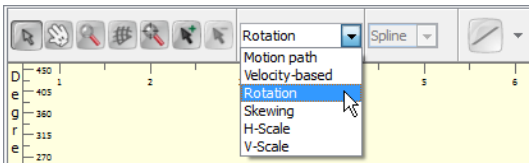
The selected element's properties appear in the Properties view.



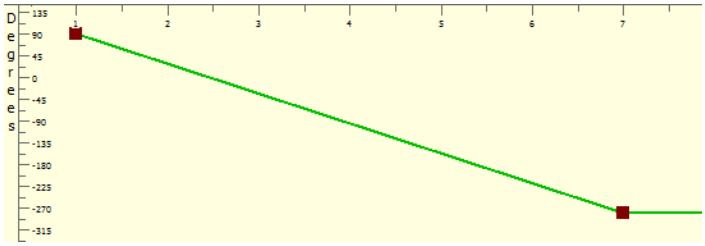
3. In the Properties view, click the Edit Velocity button.

The Function Editor view opens.

4. In the drop-down menu, select the movement for which you want to adjust the velocity.

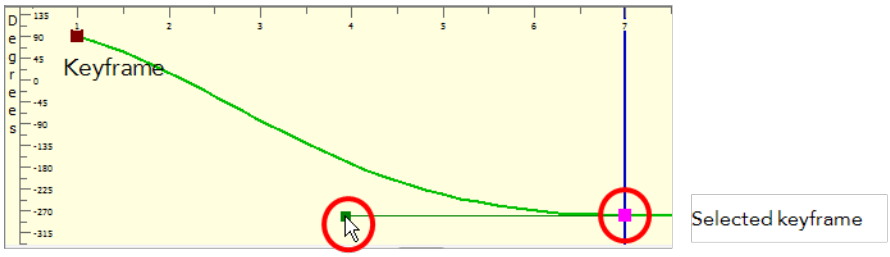


The curve corresponding to the selected movement is displayed.



5. Adjust your curve:

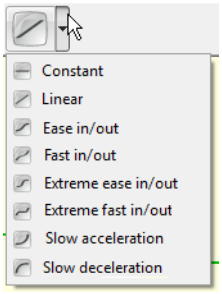
   - Click on a keyframe to select it.
   - Drag the handle to adjust the curve.



   - 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**: Changes a non-constant segment to a constant segment, and removes the automatic motion tweening created by Toon Boom Studio.
- **Linear**: Creates a straight line of constant speed for a more automated animation look.
- **Ease in/out**: Creates 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:** Creates a curve that starts quickly, slows down in the middle and ends with a final acceleration.
- **Extreme ease in/out:** Creates a more dramatic ease in, ease out effect.
- **Extreme fast in/out:** Creates a more dramatic fast in, fast out effect.
- **Slow acceleration**: Creates a curve that starts slowly to smoothly accelerate over time.
- **Slow deceleration**: Creates a curve that starts quickly to smoothly decelerate over time.

Refer to the Discovering the Interface on page 55 chapter to learn more about customizing your workspace and adding views.

Refer to the Setting the Scene on page 277 chapter to learn more about the Function Editor view.

Using the Onion Skin in Cut-out Animation

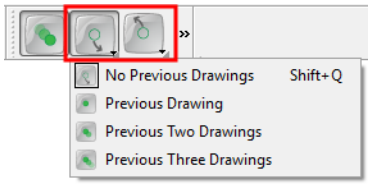
You can use the Onion Skin option to display the previous three and the next three drawings of your character as you animate your puppet. Being able to refer to these poses helps you accurately determine the size, angle or position of the drawing you are working on.

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 (Top toolbar on Mac OS X), click the Onion Skin button or select

   View > Onion Skin > Turn On Onion Skin—see Customizing Toolbars on Mac OS X on page 73.
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:** Does not display the content of the previous frames.
- **Previous Drawing:** Displays the content of the previous frame.
- **Previous Two Drawings:** Displays the content of the two previous frames.

- **Previous Three Drawings:** Displays the content of the three previous frames.
- **No Next Drawing:** Does not display the content of the previous frames.
- **Next Drawing:** Displays the content of the next frame.
- **Next Two Drawings**: Displays the content of the two previous frames.
- **Next Three Drawings**: Displays the content of the three previous frames.

Refer to Traditional Digital Animation on page 233 - Preferences on page 255 to know how to customize the display options of the Onion Skin.

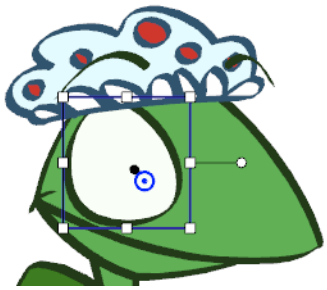
Swapping Images

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.

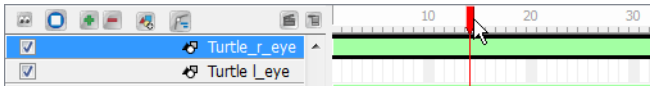
For example, if your puppet contains extra drawings of eyes, such as an open eye, a half-closed eye and a closed eye, you can easily animate a blink.

To create a blinking eye with image swapping:

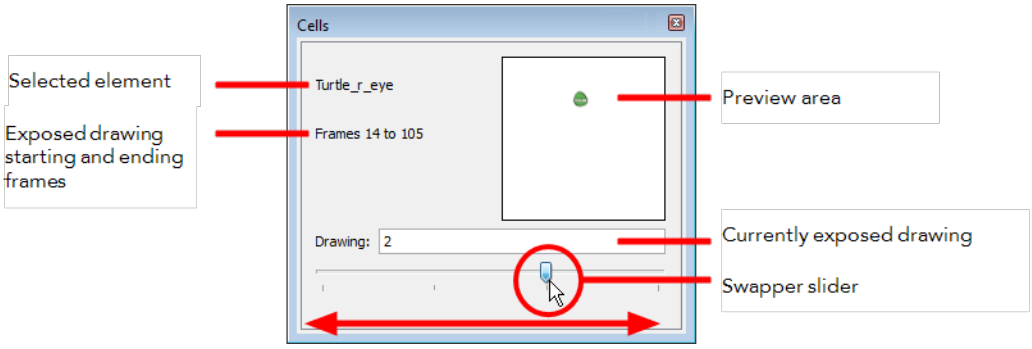
1. Use a tool from the Animation Tools toolbar. You can also select **Tools > Animation Tools >** *the desired tool*.
2. In the Camera or Timeline view, select the eye.



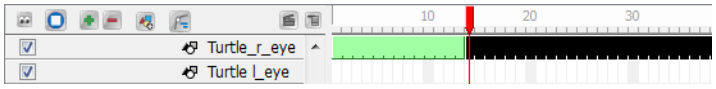
3. In the Timeline view, select the frame at which you want the puppet to start closing its eye.



4. In the Cells view, use the swapper slider to select the half-closed eye drawing.



The selected drawing displays in the preview area, and the exposure is updated automatically 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

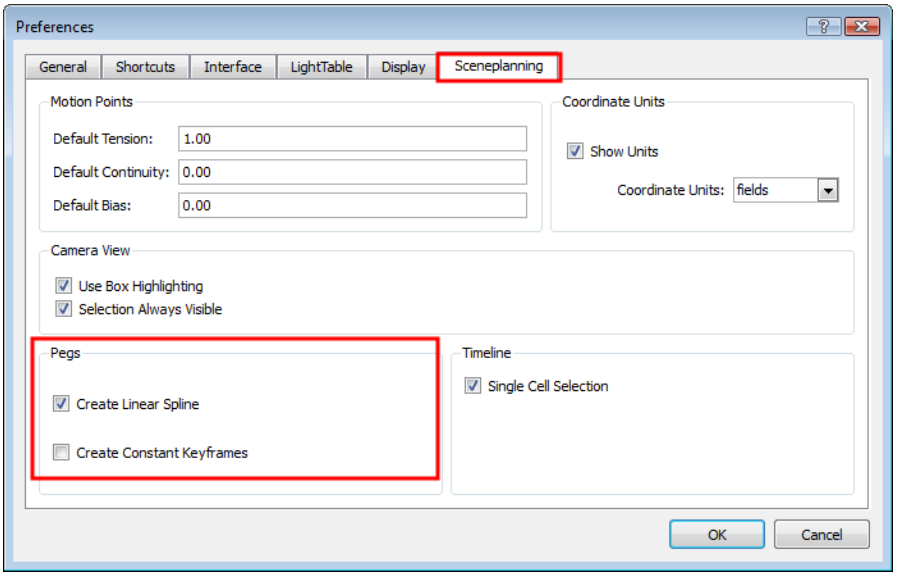
In Toon Boom Studio, you can set your own preferences to fit your cut-out animation work style.

To open the Preferences panel:

- **Windows:** Select **Edit > Preferences.**
- **Mac OS X:** Select **Toon Boom Studio 8.0 > Preferences.**

Sceneplanning Tab Preferences

Select the Sceneplanning tab to customize the preferences relative to cut-out animation.



Create Linear Spline

When you animate an element with a motion, rotation or scaling, the velocity is set to Linear by default. This means that the motion tweening executed by Toon Boom Studio is straight with no variation in the speed.

You can turn off this option by deselecting the Create Linear Spline box, so that every time you create a motion, rotation or scaling, the velocity is set to the default ease-in, ease-out curve.

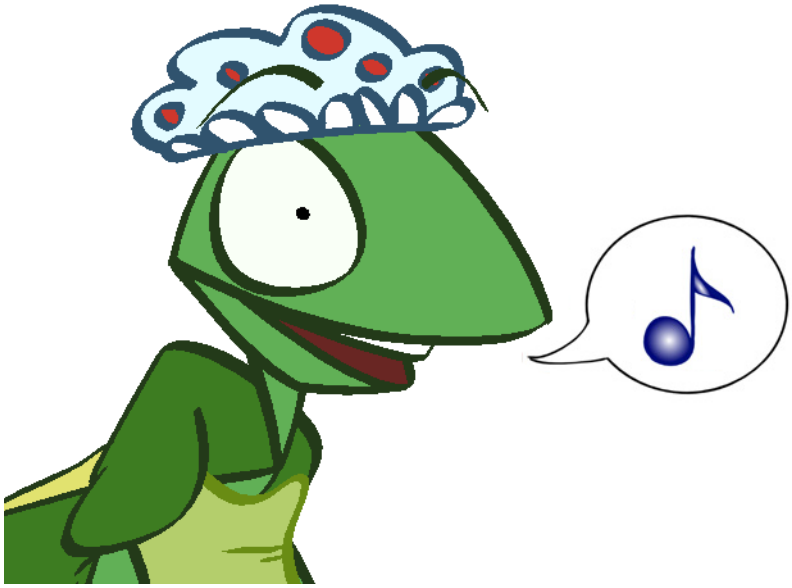
Refer to the Adjusting the Velocity on page 411 topic to learn more about velocity and ease-in, ease-out concept.

Create Constant Keyframes

By default, the Create Constant Keyframes is disabled. When you create a motion, a non-constant segment is created between every two keyframes and the motion tweening is automatically calculated by Toon Boom Studio.

You can create constant keyframes by selecting the Create Constant Keyframes option. Every time you create a motion, the segments between the keyframes are automatically constant segments. No motion tweening is calculated and the position jumps from one to another at each keyframe.

Chapter 14: Sound and Lip-sync



With 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 soundtracks and dialogue.

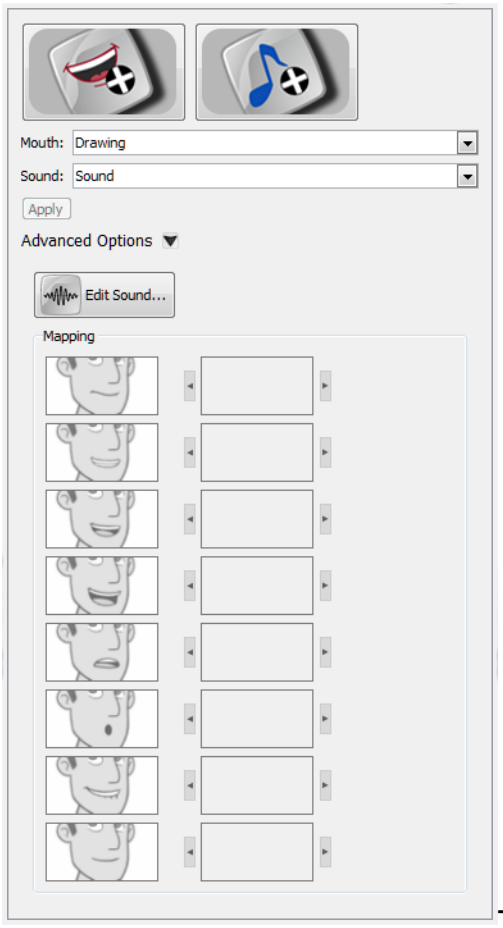
Studio can automatically analyze voice tracks to determine which of the eight animation phonemes (mouth shapes) is optimal for each frame of the sound. You can then easily draw mouth shapes for your character following the useful mouth chart that the software automatically generates. Furthermore, Studio 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:

- Accessing the Sound and Lip-sync Tools on the next page
- Importing a Sound File on page 424
- Sound Display on page 425
- Sound Playback on page 428
- Sound Scrubbing in the Timeline View on page 429
- Editing a Sound File on page 430
- Adding an Empty Sound Layer on page 441
- Lip-sync on page 442

Accessing the Sound and Lip-sync Tools

Before you can import sounds and add sync them to a character`s mouth, you will need to know how to access the sound and lip-sync tools. There are three tools you can use:

Lip-sync View: The Lip-sync view is where you can create and map mouth charts, as well as import mouth templates for your characters. 

To open the Lip-sync view:Select a sound layer from the Timeline view or a cell in the Exposure Sheet view.Do one of the

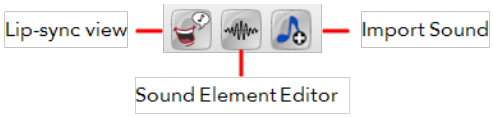
following:From the Sound toolbar (Top toolbar on Mac OS X), click the Lip-sync button.In the Properties panel, click the Lip-sync button.

Sound Element Editor: The Sound Element Editor is where you edit sounds that were created outside of Studio and imported into your scene.

Import Sound: Lets you locate and select sound files to import.

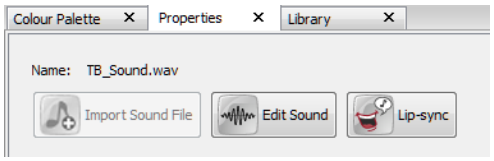
Sound Toolbar

The Sound toolbar lets you access the Lip-sync view, Sound Element Editor view, and import sound. The Sound toolbar is located at the top of the screen in Studio.



Sound Layer Properties

Once you have imported a sound file, you can easily access the Sound element editor and Lip-sync views from layer properties.



Related Topics

- Modifying the Lip-sync Detection on page 449 on page 443
- Sound Element Editor on page 430

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 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.

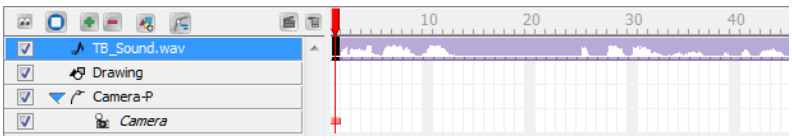
Toon Boom Studio imports, exports and plays sounds using QuickTime. Studio only supports the sound formats recognized by Qt®, with one exception: Flash ADPCM format, which is supported natively.

To import a sound file:

1. Do one of the following:
   - From the Sound toolbar (Top toolbar on Mac OS X), click the Import Sound button—see Customizing Toolbars on Mac OS X on page 73.
   - From the top menu, select **File > Import File**.
   - In the Exposure Sheet view, right-click on any cell and select **Import Sound File**.
   - In the Timeline view, click on the **Add New Elements** button. In the dialog box, select the Sound type, name the layer and click on OK. In the Properties view, click on the Import Sound File button.
   - In the Exposure Sheet view, in the top toolbar, click on the Sound button. In the Properties view, click on the Import Sound File button.

   The Open dialog box displays.
2. From the Open dialog box, browse for your sound file (*.aiff, *.mp3, *.wav, or *.m4a) and click **Open**.

   The sound layer appears in the Timeline view and is displayed as a waveform. The sound file also appears in Exposure Sheet view.



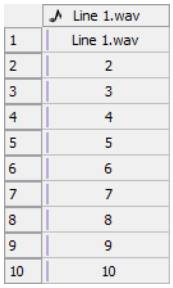
Sound Display

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 synchronize 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: by name, waveform, lip-sync mouth shapes or lip-sync thumbnails.

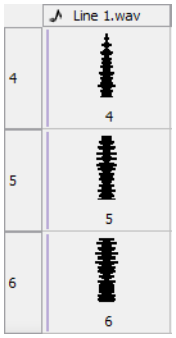
Sound Name



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

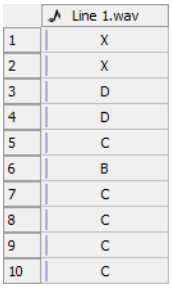


Sound can be displayed vertically, divided into cells. A waveform represents the sound as it rises and falls in volume, silence is shown as a straight line. Notice that the volume increases as the size of the waveform increases. You can use the size of the waveform as a guide to sync the sound effect with the action in your scene.

To display the waveform:

- In the Exposure Sheet View toolbar, click the Thumbnail button.

Lip-sync Mouth Shapes - Name

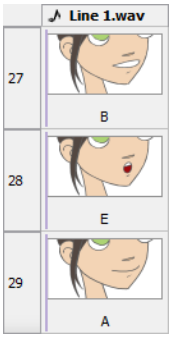


You can display a sound file by letter or name, depending on the way you label the character's mouth positions, in the column's frames. Only one mouth position is allotted per frame and this position should correspond to the sound file after lip-sync detection is performed.

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**.

Lip-sync Mouth - Thumbnails



You can display a sound file by letter or name, depending on the way you label a character's mouth positions in the column's frames, and as a thumbnail of the mouth shape.

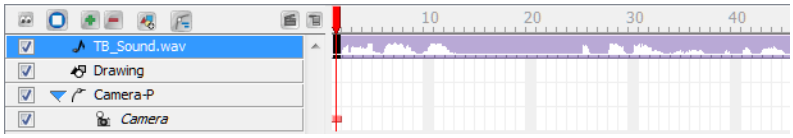
To turn on the mouth shapes thumbnails display:

- Click the Thumbnail button. The Show Lip-sync option must already be enabled in the Exposure Sheet View toolbar.

Refer to Lip-sync on page 442 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.



To show or hide the waveform:

1. If the waveform is visible, select **View > Hide Waveform**.
2. If the waveform is hidden, select **View > Show Waveform**.

Sound Playback

There are two ways you can play back sound in a project. You can play your animation and the sound, or play only the sound.

Playing the Sound and 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 On Sound Playback** to enable the option.
- In the top menu, select **Play > Turn Off Sound Playback** to disable the option.

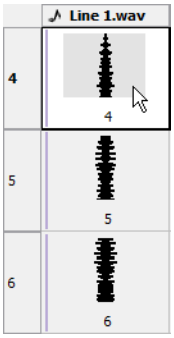
You can then play your scene as usual using the Playback toolbar controls and the sound will play as well.

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:

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, and select **Play**.

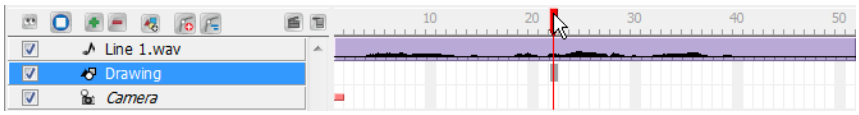


Sound Scrubbing in the Timeline View

Studio uses a process known as *sound scrubbing*. This lets you hear the sound in real time as you move the playback pointer forwards or backwards along the waveform. This is extremely useful for fine-tuning the lip-synching or sound synchronisation. You can scrub sounds in the Timeline view.

To scrub a sound in the Timeline view:

1. Select **Play > Turn On Sound Playback**.
2. Select **Play > Turn On Sound Scrubbing**.
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.



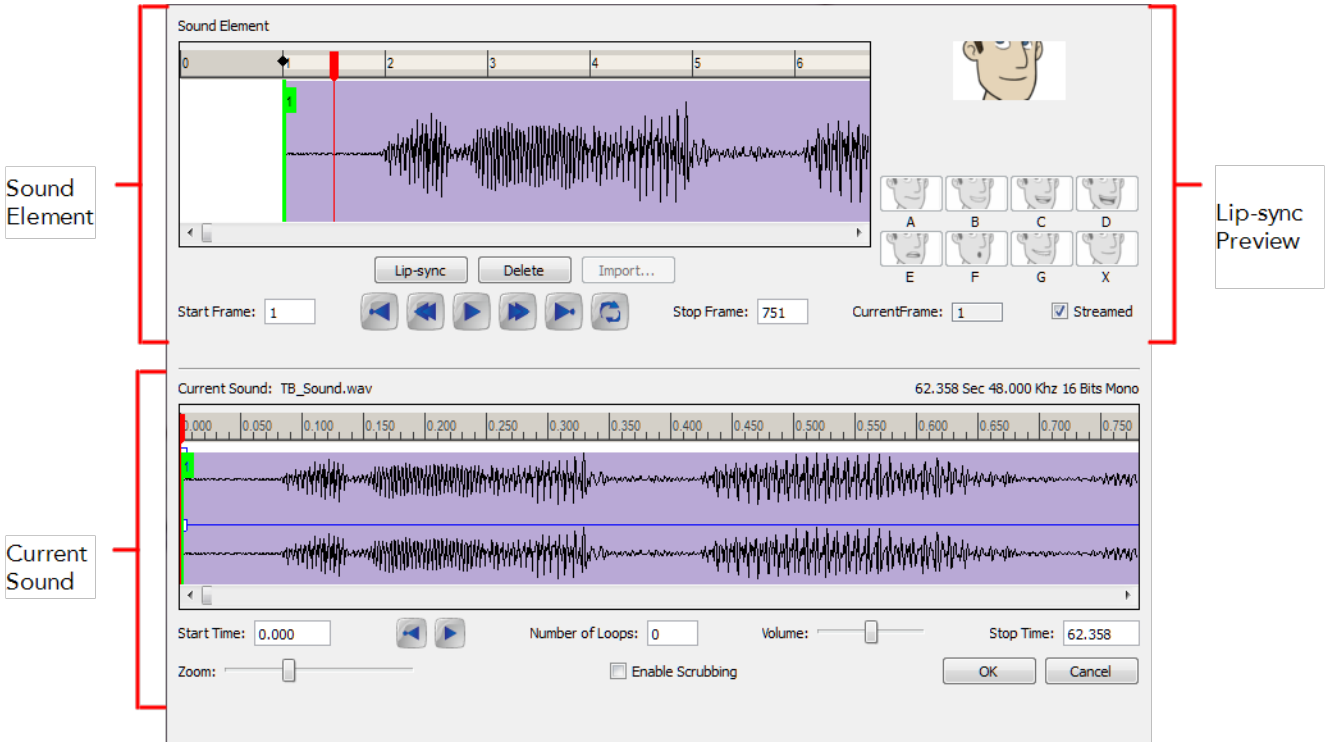
If you require finer control over the sound scrubbing, you can also enable Sound Scrubbing in the Sound Element Editor—see Editing a Sound File on the next page.

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.

Sound Element Editor

The Sound Element Editor is where you edit sounds that were created outside of Studio and imported into your scene.



The Sound Element Editor consists of three main panels.

1. **Sound Element** - The waveform 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** - You can preview the automated detection and manually insert different mouth positions to correspond with the sound sample—see Lip-sync on page 442.

You can do the following in the Sound Element Editor:

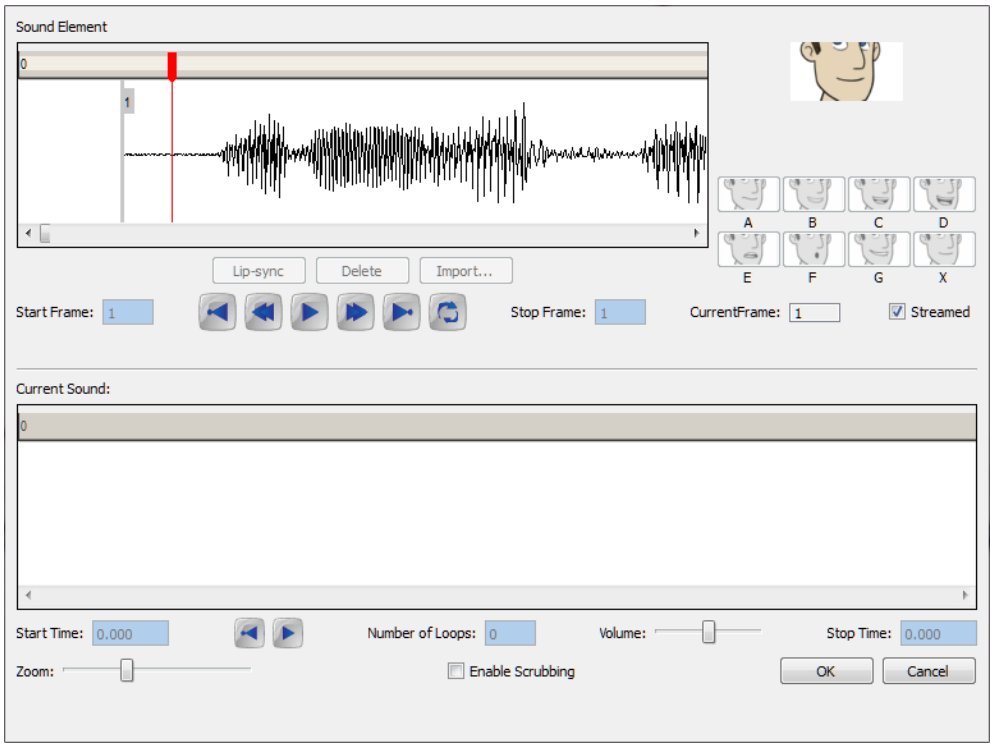
- Changing the Start or End Frame of a Sound on the facing page
- Trimming a Sound File on page 433
- Looping a Sound on page 434
- Mixing the Sound Volume on page 435
- Custom Playback Range on page 437

- Changing from Event to Streamed Sounds on page 437
- Sound Scrubbing in the Sound Element Editor on page 439
- Deleting a Sound on page 439
- Recomputing the Mouth Chart on page 450

To open the Sound Element Editor:

1. In the Timeline or Exposure Sheet view, select the sound element you want to edit and do one of the following:
   - In the Sound toolbar or Properties panel, click the Edit Sound button.
   - Click the Timeline View menu and select **Edit Sound.**
   - From the top menu, select **Element > Edit Sound**.
   - Right-click in the Timeline Sound layer or on the Exposure Sheet view sound column and select **Edit Sound**.

   The Sound Element Editor opens.



Changing the Start or End Frame of a Sound

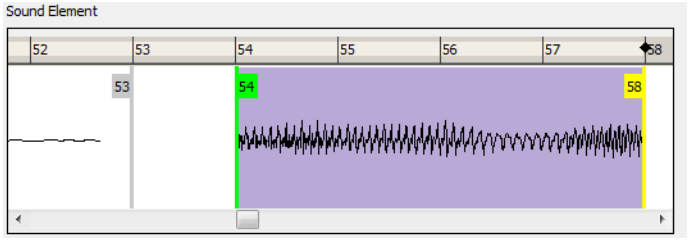
To synchronize the sound with specific images in your scene, you must set a start frame for your sound. To make sure the sound ends at a specific frame, you must set an end frame.

To change the start frame or the end frame of a sound:

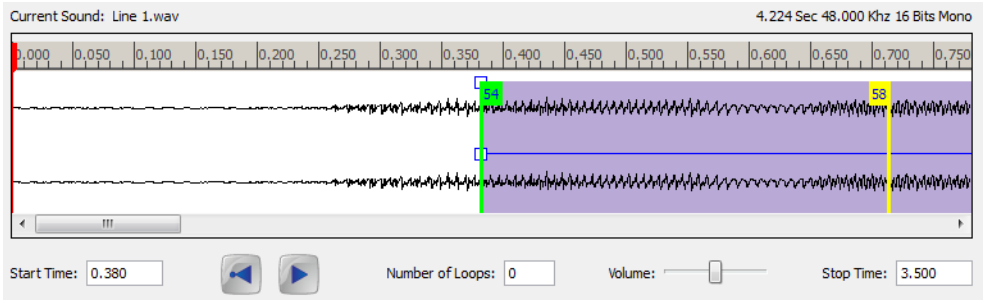
1. In the Timeline or Exposure Sheet view, select the Sound element you want to edit.
2. In the Sound toolbar or Properties panel, click the Edit Sound button.

The Sound Element Editor opens.

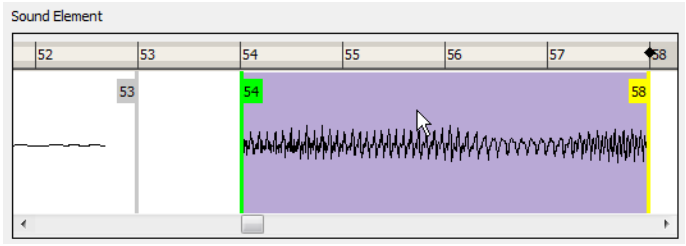
3. Select a sound sample from the Sound Element panel. To distinguish one sound section from another on the same sound layer, check the frame numbers that appear on the tabs beside the start and stop lines of each waveform section.



4. In the Current Sound panel, click the Play button (only the selected sound plays).

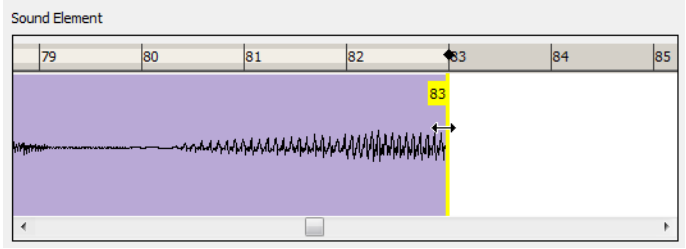


5. In the Sound Element panel, drag the selected clip to the frame number where you want it to start playing.

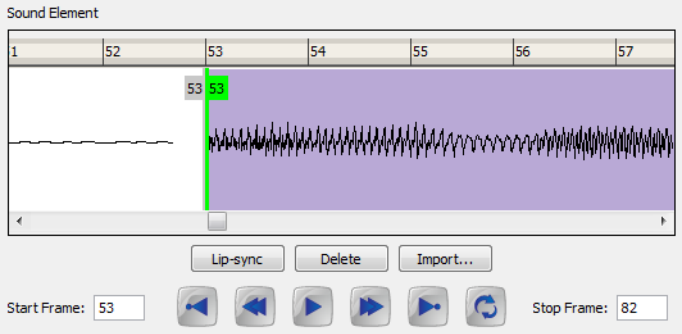


You can only move the clip to a section that does not already contain a clip; you cannot overlap two clips in the same element.

6. 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.



7. To hear how all of the clips fit together in the element, click Play in the Sound Element panel.



8. In the Current Sound panel, click the Play button if you want to hear only the selected clip.

9. Click OK.

   The Exposure Sheet and Timeline views display the sound clip at the start frame you selected.

Trimming a Sound File

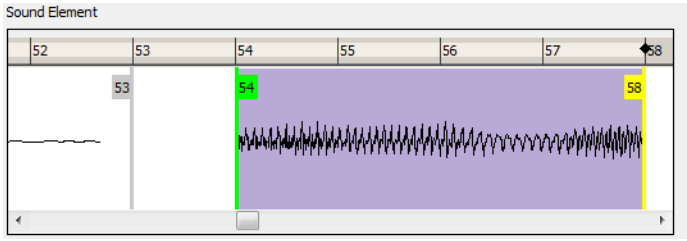
To play only a section of a sound file, use the Sound Element Editor to select the part you want to use. For example, if there extraneous noise at the start of the sound, you can use the Sound Element Editor to edit out the noise.

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 Studio.

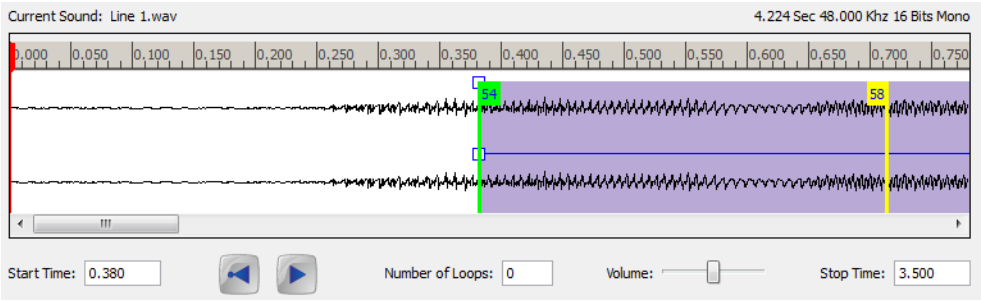
To trim the start and end of a sound file:

1. In the Timeline or Exposure Sheet view, select the Sound element you want to edit.
2. In the Sound toolbar or Properties panel, click the Edit Sound button.

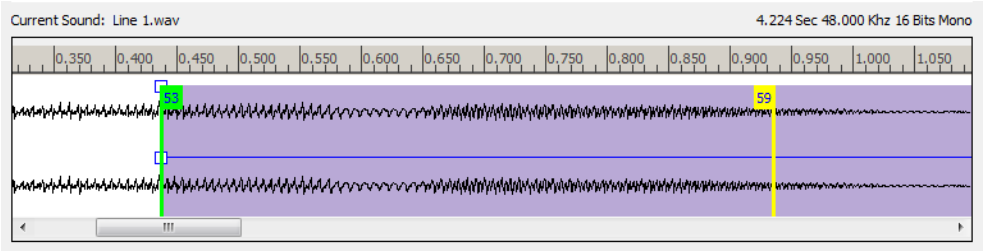
   The Sound Element Editor opens.
3. Select a sound from the Sound Element panel. To distinguish one sound section from another on the same sound layer, check the frame numbers that appear on the tabs beside the start and stop lines of each waveform section.



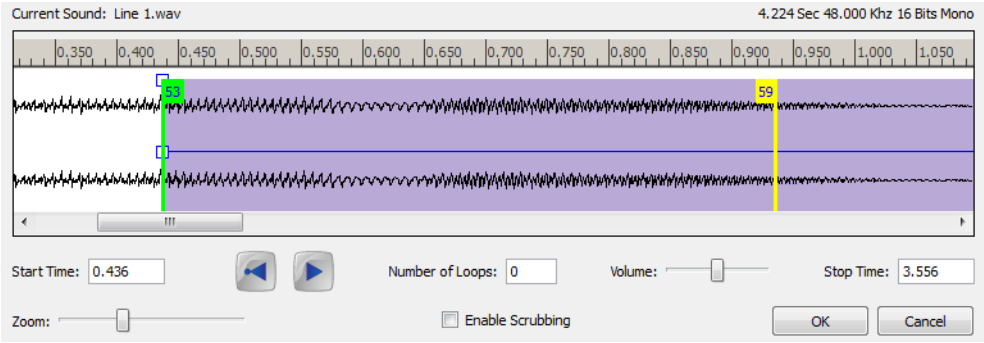
4. In the Current Sound panel, click the Play button (only the selected sound plays).



5. 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.



6. In the Current Sound panel, click the Play button 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 you can trim it more accurately.



7. Once you are sure that the sound is trimmed correctly, click OK.

   The trimmed sound sample appears in both the Timeline and Xsheet Views at the start and end positions that you selected.

Looping a Sound

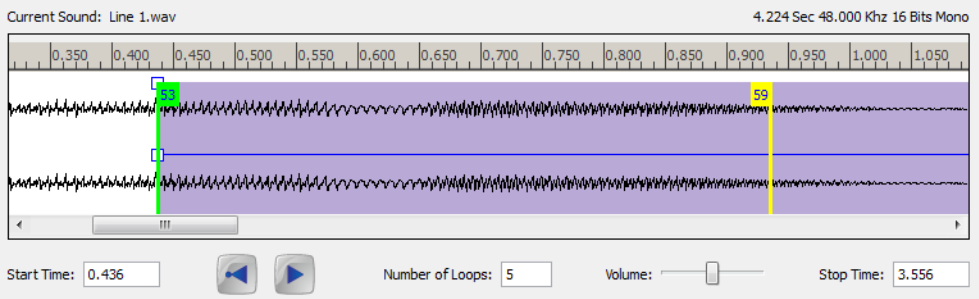
To repeat a sound, you need to specify, in the Sound Element Editor the number of times that you want it to loop.

To loop a sound sample:

1. In the Timeline or Exposure Sheet view, select the Sound element you want to loop.
2. In the Sound toolbar or Properties panel, click the Edit Sound button.

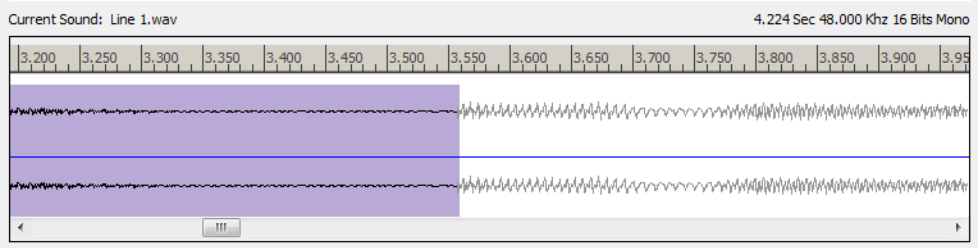
   The Sound Element Editor opens.
3. From the Sound Element panel, select the sound section you want to loop.

4. In the Current Sound panel, type the number of times you want the sound to play in the Number of Loops field.



5. Press the [Return] key.

   The looped sound appears after the current sound and is represented by 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

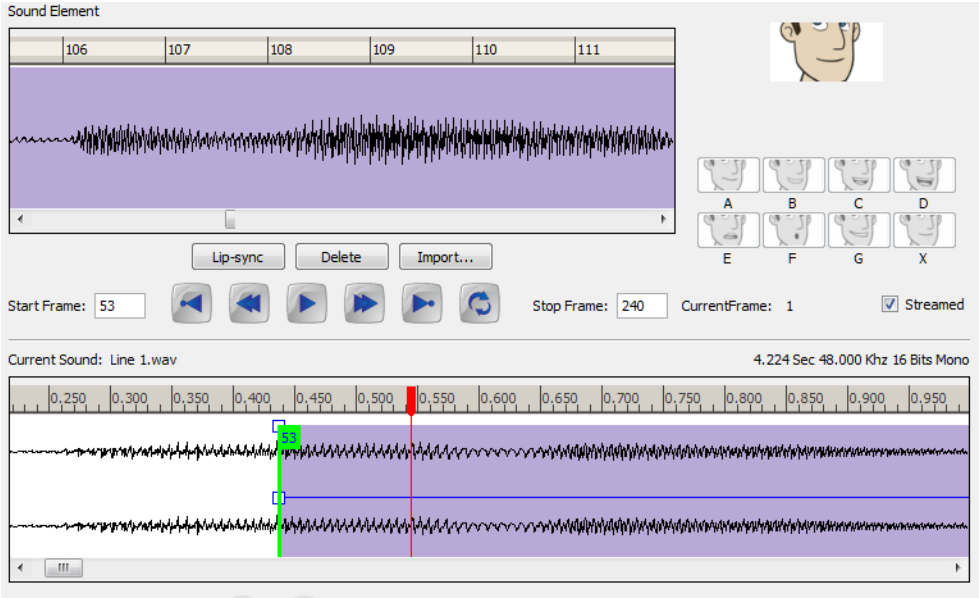
You can adjust the volume of an entire sound clip or modify the volume in increments by adjusting the fade-in and fade-out times. The fade edit only affects the playback; the original sound file is not affected.

To adjust the overall volume of the entire sound clip:

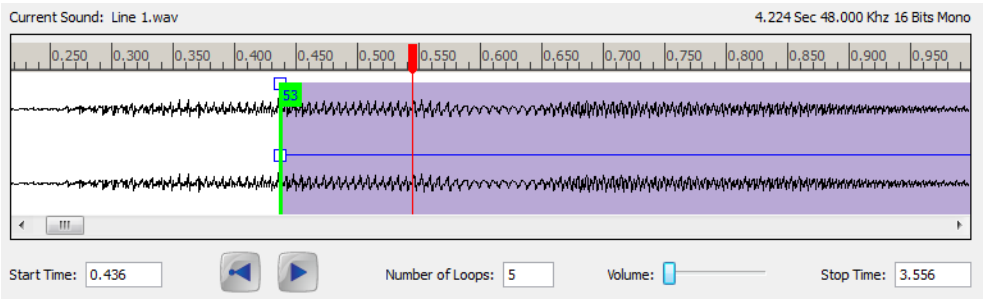
1. In the Timeline or Exposure Sheet view, select the Sound element you want to loop.
2. In the Sound toolbar or Properties panel, click the Edit Sound button.

   The Sound Element Editor opens.
3. In the Sound Element panel, select the sound that you want to work on.

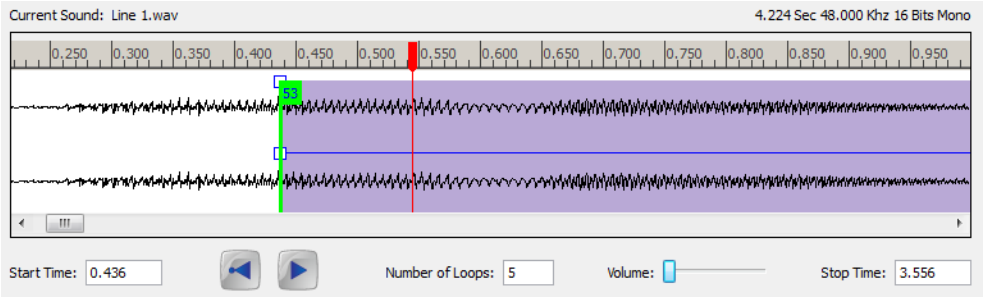
   An expanded version of the selected sound showing more detail appears in the Current Sound panel.



4. In the Current Sound panel, use the Volume slider to adjust the volume.



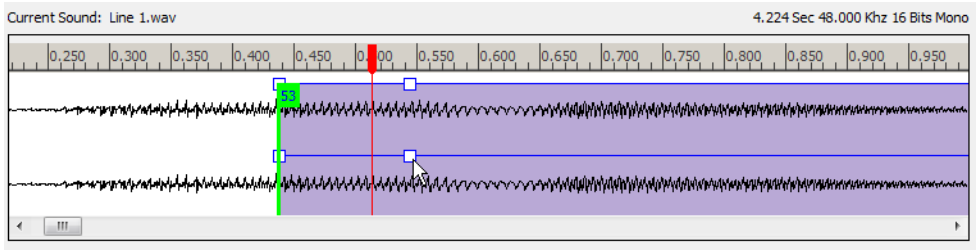
5. In the Current Sound panel, click the Play button to verify the volume.



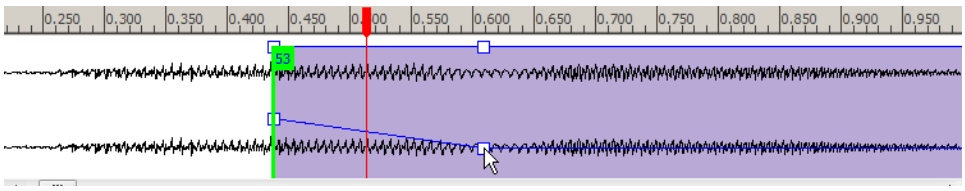
To create a fade in/out effect on a sound clip:

1. In the Timeline or Exposure Sheet view, select the Sound element you want to edit.
2. In the Sound toolbar or Properties panel, click the Edit Sound button.

   The Sound Element Editor opens.
3. In the Sound Element panel, select the sound that you want to work on.
4. In the Current Sound panel, click the thin blue line above the waveform to add a volume control point.



5. 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 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.

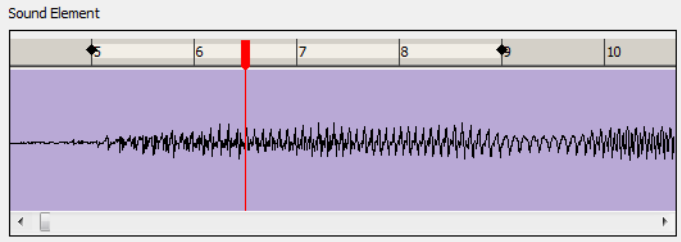
6. In the Current Sound panel, click the Play button to check the fade.

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. In the Sound Editor Element panel, click the Play button to play only the sound 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 Exporting Your Project on page 523 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:

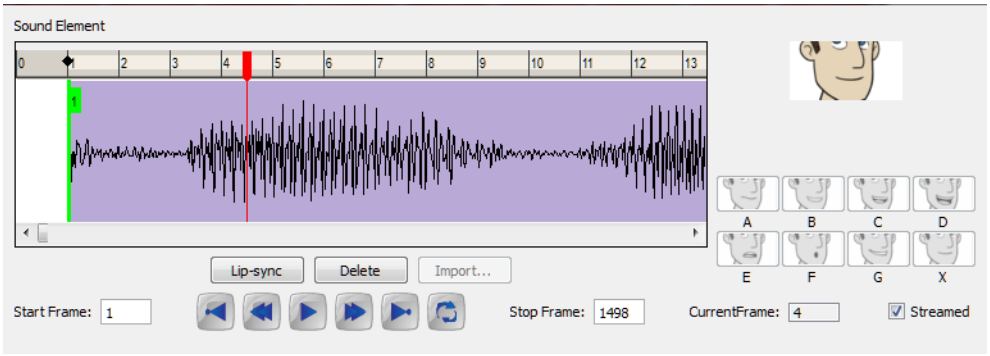
- **Downloading**
  - Event sounds are downloaded by the Adobe® Flash® player before they play.
  - Event sounds are reusable. Once downloaded, the Adobe® Flash® player can play the sound repeatedly without downloading it again. This is not possible with streamed sound.
  - Streamed sound plays as it 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 want to edit.
2. In the Sound toolbar or Properties panel, click the Edit Sound button.

   The Sound Element Editor opens.
3. In the Sound Element panel, select the sound you want to work on.



4. Select the **Streamed** option.

This turns streaming on or off. If the Streamed option is not selected, the sound is set as an event sound.

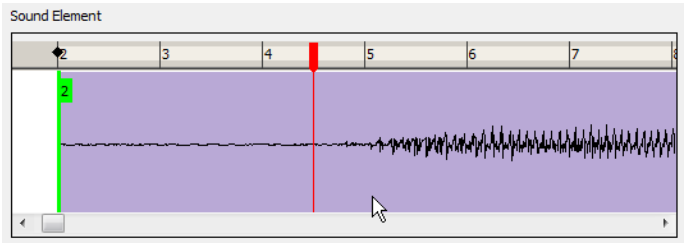
Sound Scrubbing in the Sound Element Editor

Studio uses a process known as *sound scrubbing*. This lets you hear the sound in real time as you move the playback pointer forwards or backwards along the waveform. This is extremely useful if you have to fine tune the lip-syncing or sound synchronisation You can scrub sounds in the Sound Element Editor.

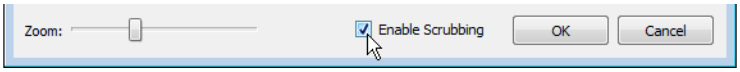
To scrub a sound from the Sound Element Editor:

1. In the Timeline or Exposure Sheet view, select the Sound element you want to edit.
2. In the Sound toolbar or Properties panel, click the Edit Sound button.

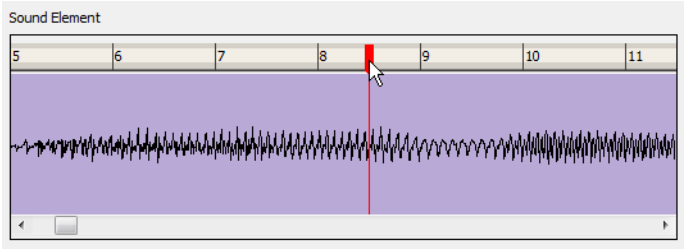
   The Sound Element Editor opens.
3. In the Sound Element panel, select the waveform you want to scrub.



4. Below the Current Sound panel, select the **Enable Scrubbing** option. This option sets the red markers in scrub mode.



5. Drag the red playback marker left and right to hear the sound in sound scrubbing.



Deleting a Sound

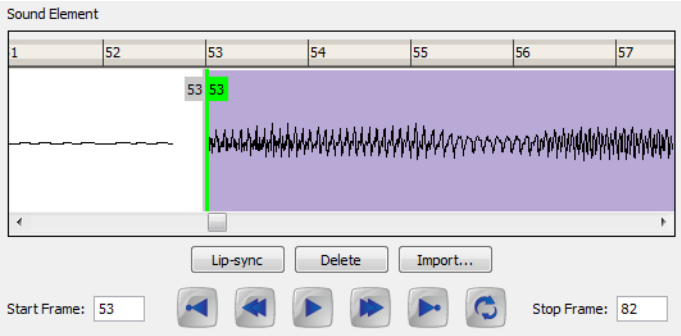
You can delete a sound in the Sound Element Editor.

To delete a sound:

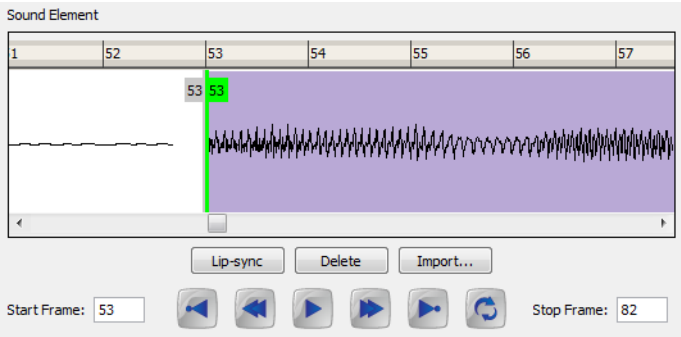
1. In the Timeline or Exposure Sheet view, select the Sound element you want to remove the sound file from.
2. In the Sound toolbar or Properties panel, click the Edit Sound button.

   The Sound Element Editor opens.

3. In the Sound Element panel, select the sound you want to delete.
4. To distinguish one sound section from another on the same sound layer, check the frame numbers that appear on the tabs beside the start and stop lines of each waveform section.



5. Click **Delete**.



The Sound is removed from the Exposure Sheet and Timeline views.

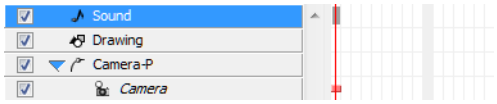
Adding an Empty Sound Layer

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 want your character to 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.

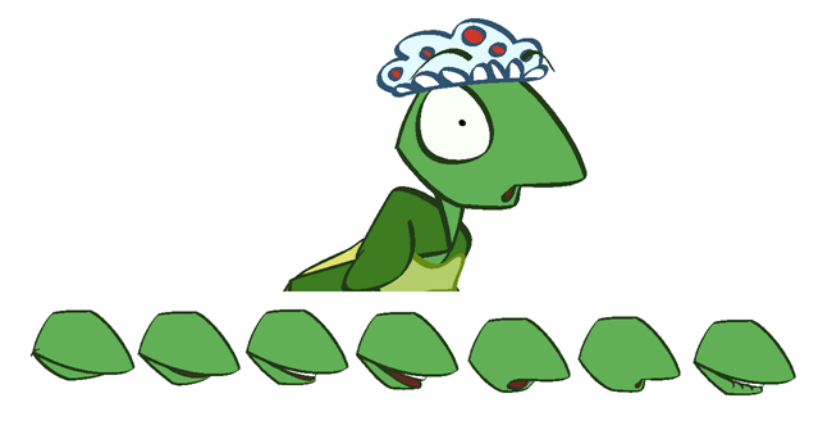
To add an empty sound layer:

- In the Exposure Sheet view, click 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.
- Select **Element > Add > Sound**.

An empty sound element appears in the Exposure Sheet and Timeline view.



Lip-sync

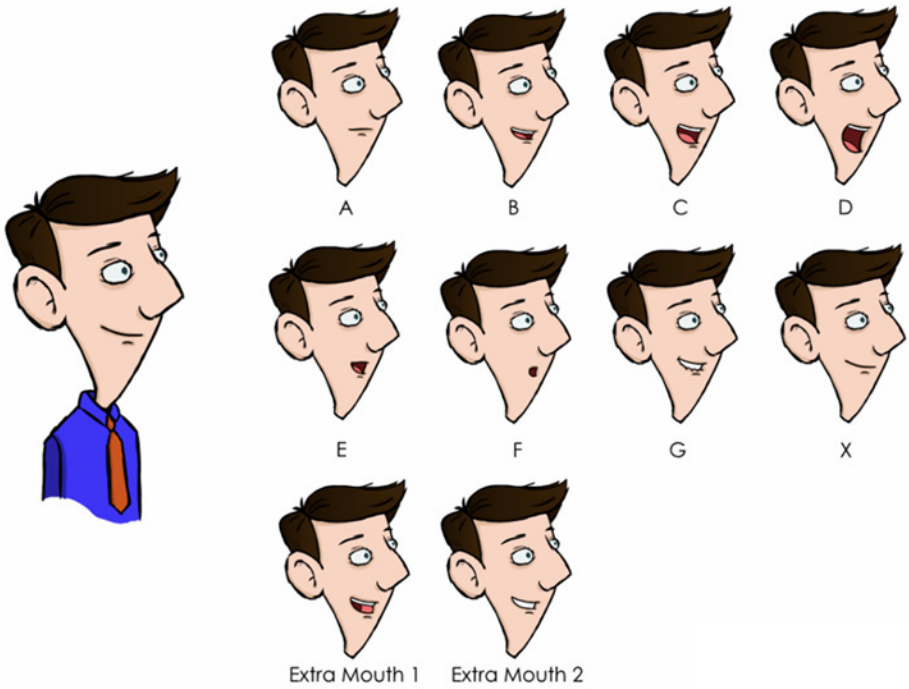


Adding a lip-sync to a project can really enhance its quality and storytelling. However, it can be difficult to shape a character's mouth so it matches the sound at the precise frame. To solve this problem, Studio provides a lip-sync feature which analyzes the content of a sound element and generates 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). You can lip-sync the traditional way or let the Studio automatically create the basic detection.

The mouth shapes used by 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



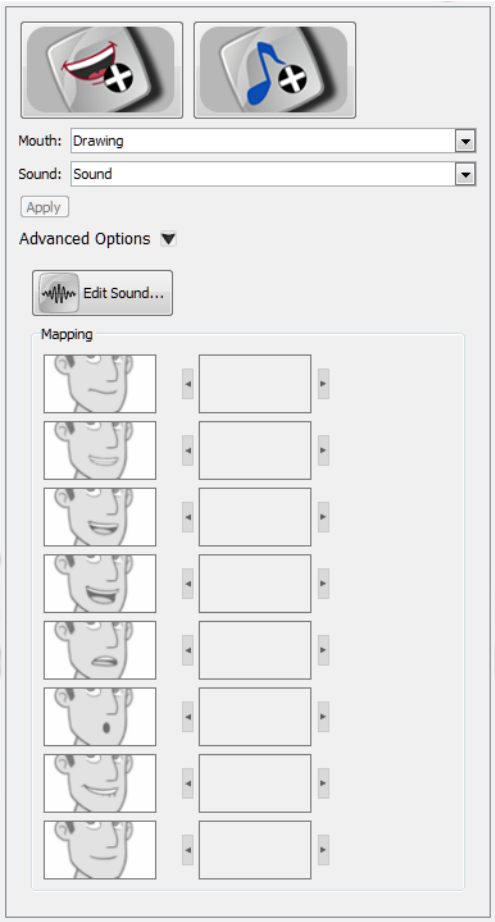
You can refer to the mouth chart positions as you draw the shape of your character's mouth.

This section explains:

- Modifying the Lip-sync Detection on page 449 below
- Creating a Lip-sync Using a Mouth Template on the next page
- Creating a Lip-Sync Using Your Own Drawings on page 446
- Lip-sync on the previous page
- Automatic Lip-sync Detection on page 448
- Modifying the Lip-sync Detection on page 449

Lip-sync View

The Lip-sync view is where you can create and map mouth charts, as well as import mouth templates for your characters.



To open the Lip-sync view:

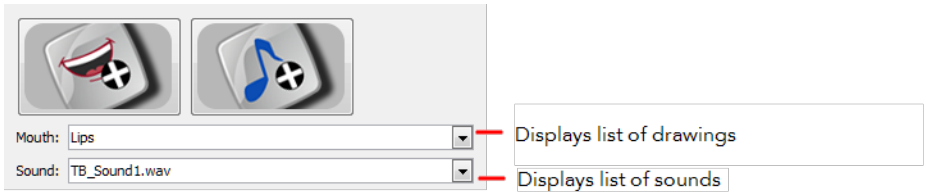
1. Select a sound layer from the Timeline view or a cell in the Exposure Sheet view.
2. Do one of the following:
   - From the Sound toolbar (Top toolbar on Mac OS X), click the Lip-sync button.
   - In the Properties panel, click the Lip-sync button.

Creating a Lip-sync Using a Mouth Template

Studio comes with a variety of mouth templates that you can play and experiment with on your characters. You can create a lip-sync and use an existing sound layer or create the lip-sync and then import the sound.

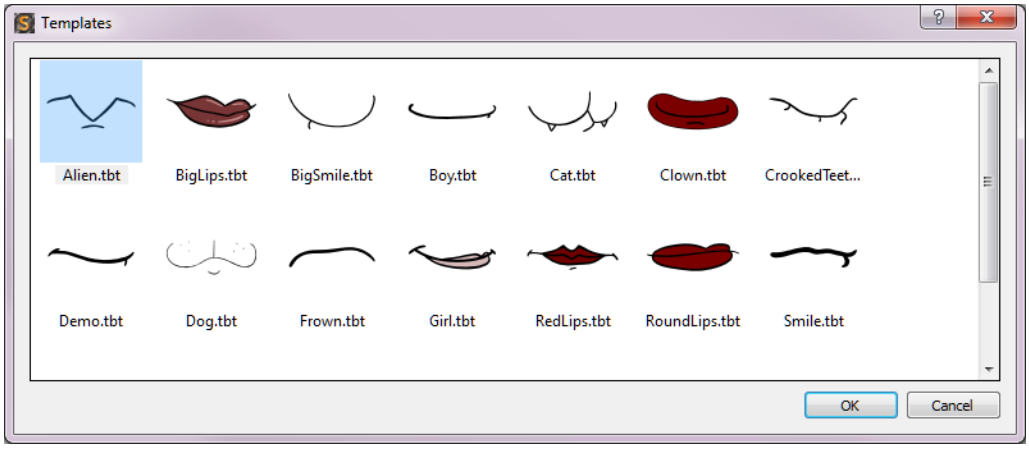
To create a lip-sync using a mouth template:

1. From the Sound toolbar, click the Lip-sync button (Top toolbar on Mac OS X).



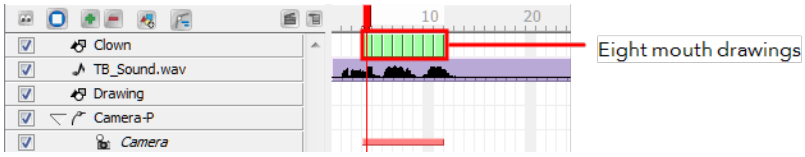
2. Do one of the following to add sound:
   - Click the Import Sound button. From the Open dialog box, select a sound file and click **Open**.
   - From the Sound list, select a sound file you have already imported.
3. If needed, edit the sound by clicking the Edit Sound button and making any adjustments in the Sound Element Editor.
4. Click the Import Template button.

   The template dialog box opens to display the mouth templates.



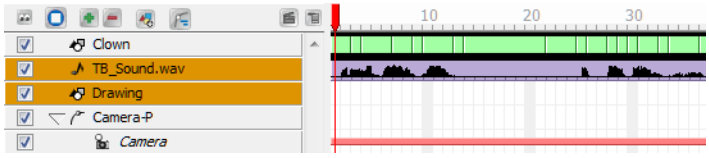
5. Select a mouth template and click OK.

   In the Timeline view, a Drawing layer is created containing eight mouth drawings.



6. In the Lip-Sync view, click **Apply** to generate the lip-sync with the sound file.

   The mouth shapes are synced with the sound file.



7. In the Drawing view, use the Select tool in the Animation Tools toolbar to scale the mouth drawings on the layer.
8. In the Camera view, place the mouth at the correct location on your character.

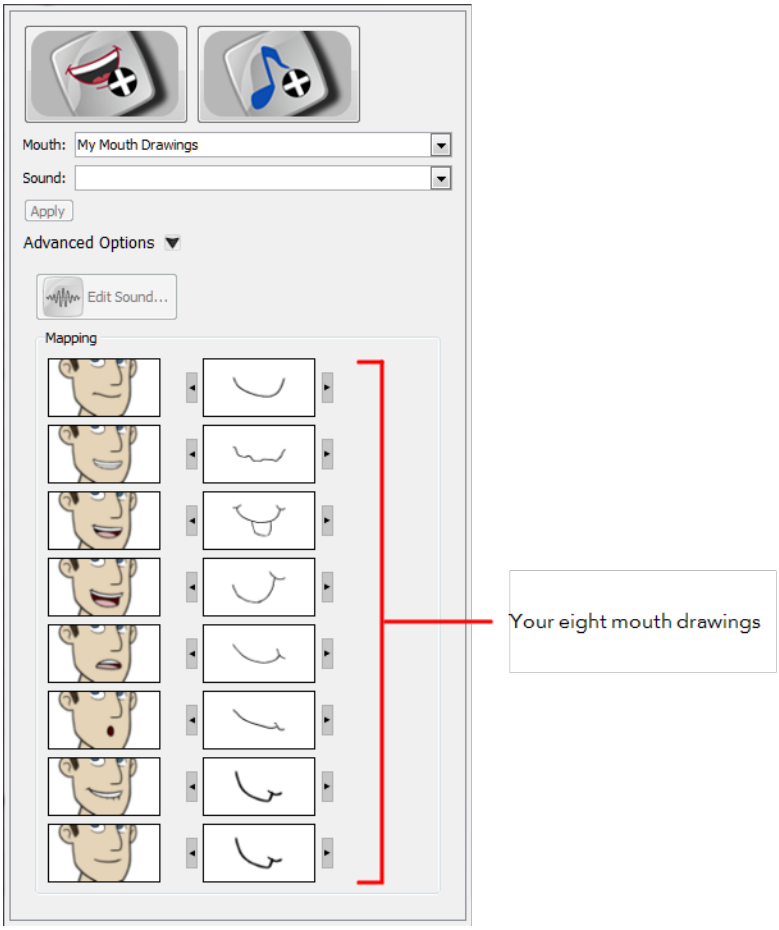
Creating a Lip-Sync Using Your Own Drawings

You can use your own drawings to generate a lip-sync.

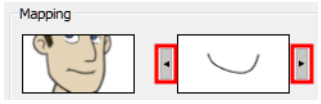
To create a lip-sync using your own drawings:

1. In the Timeline view, select the drawing layer that contains your eight mouth drawings.
2. From the Sound toolbar (Top toolbar on Mac OS X), click the **Lip-sync** button.

   The Lip-sync view displays. Your eight mouth drawings are automatically mapped with the animation phonemes.

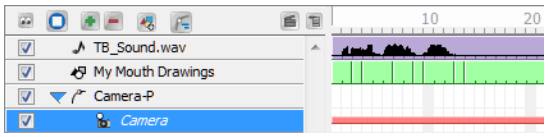


3. Do one of the following to add sound:
   - Click the Import Sound button. From the Open dialog box, select a sound file and click **Open**.
   - From the Sound list, select a sound file you have previously imported.
4. If needed, edit the sound by clicking the Edit Sound button and making any adjustments in the Sound Element Editor.
5. If needed, you can adjust the mouth mapping by clicking the Previous Drawing and Next Drawing arrows beside any of the mouths.



6. Click **Apply** to generate the lip-sync with the sound file.

   The mouth shapes are synced with the sound file.



Lip-sync Detection

You can detect the lip-sync for a sound in the Exposure Sheet view or Sound Element Editor.

To detect lip-sync for a sound in the Exposure Sheet view:

1. In the Exposure Sheet view, right-click on a cell of the sound column and select **Show Lip-sync**.

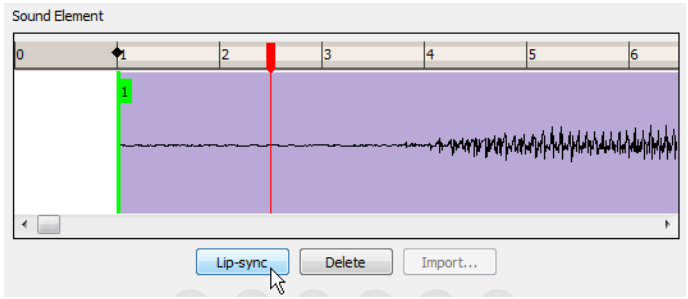
   Studio analyzes the selected sound clips and assigns a lip-sync letter to each sound cell. The number in each frame is replaced by a letter that represents the mouth shape.

You can enable the Thumbnails display option to show a preview image of the mouth shape. Once you enable the Show Lip-sync option, click the Thumbnail button in the Exposure Sheet View toolbar.

To detect lip-sync for a sound using the Sound Element Editor:

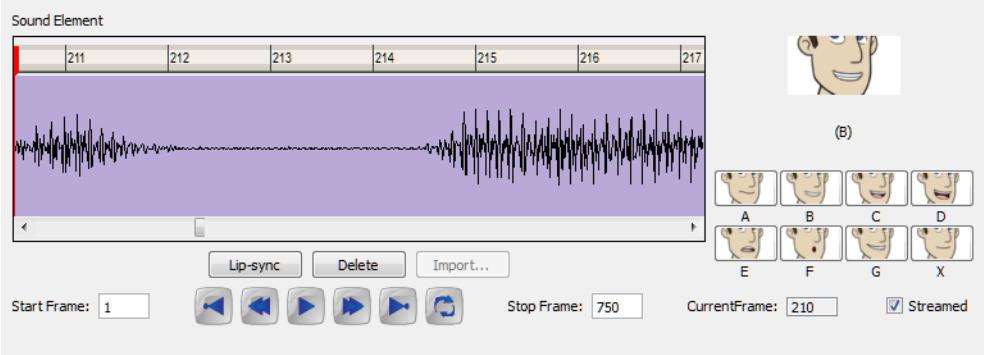
1. In the Timeline or Exposure Sheet view, select the Sound element from which you want to generate a chart of mouth shapes.
2. In the Sound toolbar or Properties panel, click the Edit Sound button.

   The Sound Element Editor opens.
3. In the Sound Element panel, select the waveform from which you want to generate the mouth chart and click **Lip-sync**.



   A progress bar appears as Studio analyzes the selected sound clips and assigns a lip-sync letter to each sound cell.
4. Click the Play button to hear the sound clip.

The Lip-sync Preview area shows a preview of the result.



Automatic Lip-sync Detection

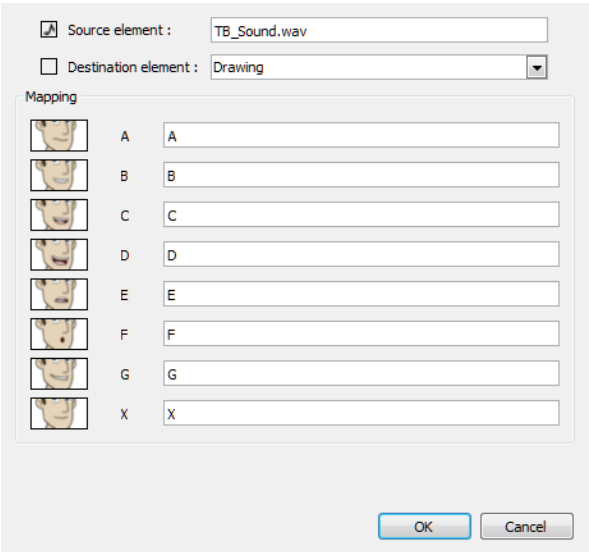
Studio can automatically map drawings in an element to the mouth chart you have generated for a sound using the Lip-sync button in the Sound Element Editor dialog box. This can save time when lip-syncing a voice track.

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-clickon the header of the sound element was already lip-synced and select **Modify Lip-sync Mapping**.

   The Lip-Sync Mapping dialog box opens.



   - **Source element:** The Sound element from which the lip-sync mapping will be based.
   - **Destination element:** Lets you 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 that 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 OK.
3. Click the Play button in the Playback toolbar to see and hear the results in the Camera view.

4. To play back your scene with sound, enable the sound if you not already done so. From the top menu,select **Play > Turn On Sound Playback**.

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.

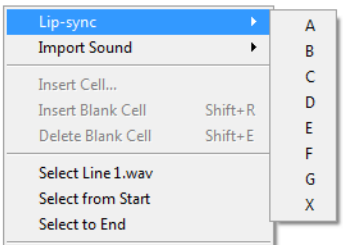
For example, you may have a character who remains silent for ten frames between two speeches. Studio would normally assign an X image to the silence. However, if you want your character's mouth to hang open in astonishment for these ten frames, you can change the lip assignment for these frames from an X to an E.

You can modify the lip-sync from the Exposure Sheet view or Sound Element Editor.

Modifying the Lip-sync in the Exposure Sheet View

To change the lip assignment of a sound in the Exposure Sheet:

1. In the Exposure Sheet view, right-click in the cell that contains the mouth position you want to change.
2. Select **Lip-sync > A, B, C, D, E, F, G** or **X**. Choose the letter that reflects the mouth position you want to use for that sound.



The drawing automatically updates in the Exposure Sheet and Timeline view.

Modifying the Lip-sync in the Sound Element Editor

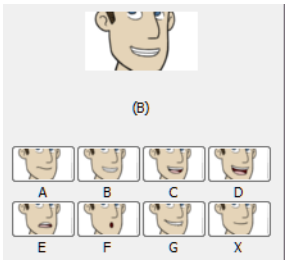
To change the mouth position assignment of a sound in the Sound Element Editor:

1. In the Timeline or Exposure Sheet view, select the Sound element with the lip-sync you want to modify.
2. In the Sound toolbar or Properties panel, click the Edit Sound button.

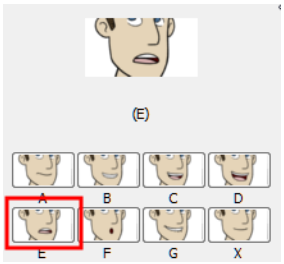
3. In the Sound Element panel, drag the red frame slider to the frame with the mouth position you want to change.

4.

In the Lip-sync image area, the image on top represents the lip position currently assigned to the frame.



5. To change the image assigned to the frame, select a mouth position below the preview image.



The preview image changes to the mouth position image you selected. The position is also updated in the Exposure Sheet and Timeline views.

Recomputing the Mouth Chart

Recomputing the mouth chart erases any manual modifications you 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 Studio or assign your own lip-sync images.

However, if you change the sound's start frame, edit it or reassign its mouth position afterwards, you must reanalyze the sound, and regenerate the mouth chart for it.

To recompute the mouth chart for a selected sound in the Exposure Sheet:

Remember that recomputing erases modifications (see warning above).

1. In a Sound column in the Exposure Sheet, right-click on a cell that contains the sound file you want to recompute and select **Recompute Lip-sync**.

   The mouth position assignment for each frame is recomputed, erasing any modifications you made.

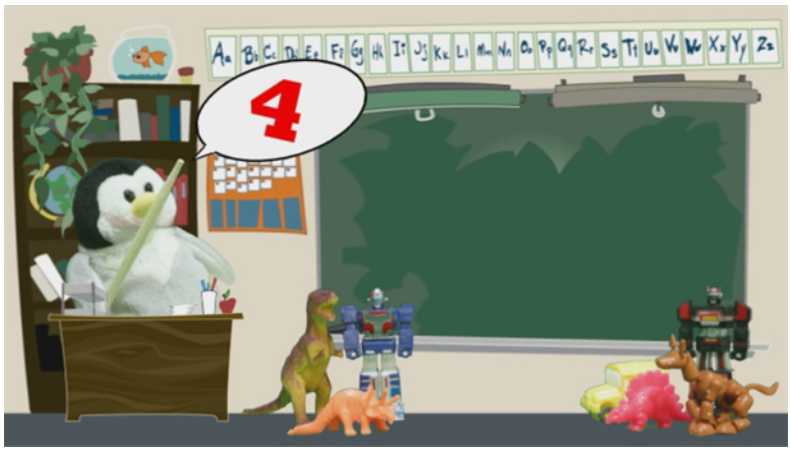
To recompute the mouth chart for a selected sound in the Sound Element Editor:

Remember that recomputing erases modifications (see warning above).

1. In the Timeline or Exposure Sheet view, select the Sound element.
2. In the Sound toolbar or Properties panel, click the Edit Sound button.

   The Sound Element Editor opens.
3. In the Sound Element panel, select a waveform to recompute and click **Lip-sync**.

Chapter 15: Stop-motion Animation



Stop-motion animation has been around since animators first realized that all it took was a nudge to a clay figure, puppet or object and then taking 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, which 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 the next page
- Image Capture Settings on page 454
- Light Table and Onion Skin on page 455
- Colour Keying on page 458
- Image Capture on page 460
- Vectorization and Clean-up on page 463

Characters and Stage

Before you begin, it is important to gather the characters that you intend to use and 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 want.

Setting Up Your Background

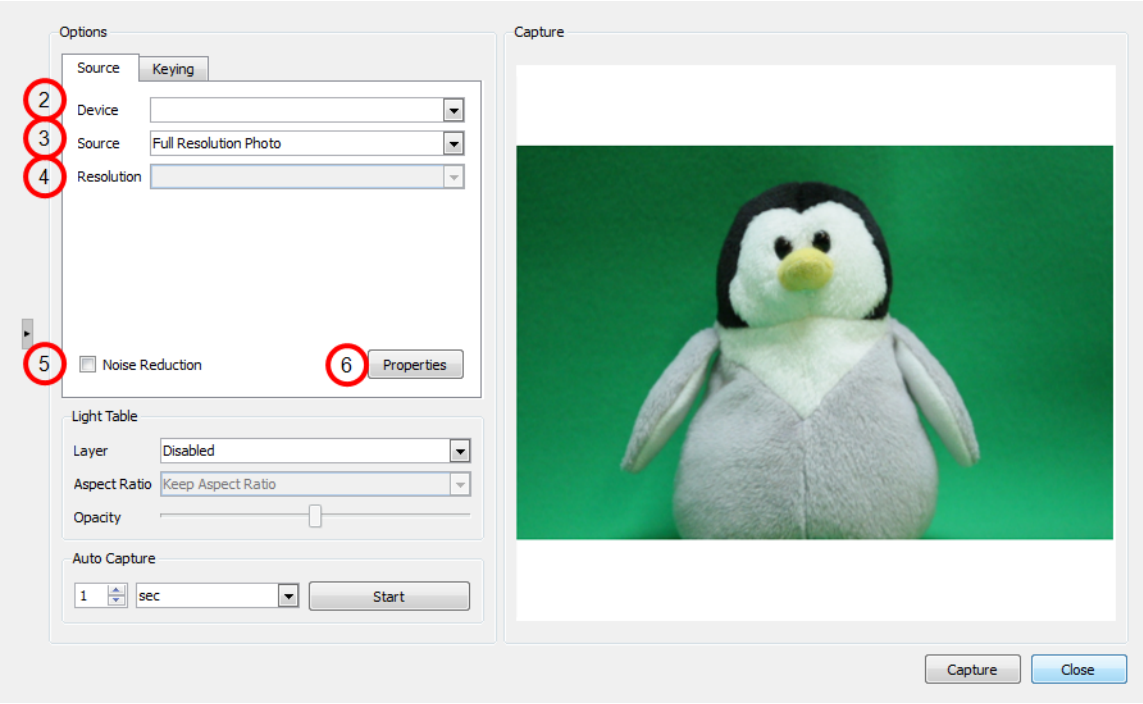
Depending on whether you want a 2D or 3D environment, you have to set up your background accordingly. If you prefer a 3D background, then you would treat the elements in the same manner that you treat your stop-motion characters. If you would like a 2D cartoon background, then you need to set up what is known as either a blue or green screen.

A blue or green screen is a solid-coloured piece of fabric that you can easily select and block out in the software. This process is known as *colour keying*. You can then superimpose another background, such as a 2D drawing created in Studio or 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 is to key out the colour later on. Lighting does not necessarily mean a multi-lamp setup; a well-lit room with natural daylight is often best.

Image Capture Settings

Before you start, be sure your image recording device is plugged into your computer and turned on. Follow the camera manufacturer's 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 using a tripod or some other mounting system. The camera must be rigidly fixed because any movement of the camera, such as shaking or vibration, affects the captured images. The only items that move are the items on the stage.



Setting Up the Image Capture Options

To set up for image capture:

1. From the File menu, select **Acquire > From Capture Device**.

   The Image Capture window appears.
2. In the Options section, select the **Source** tab. Find and select your recording device from the Device list.
3. From the Source list, select **Full-Resolution Photo** if it is available for your recording device (some devices, such as webcams may not allow for this option). Otherwise, select **Live Preview** if you prefer to take faster, lighter images for a rough test.

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, see Importing Artwork on page 161.

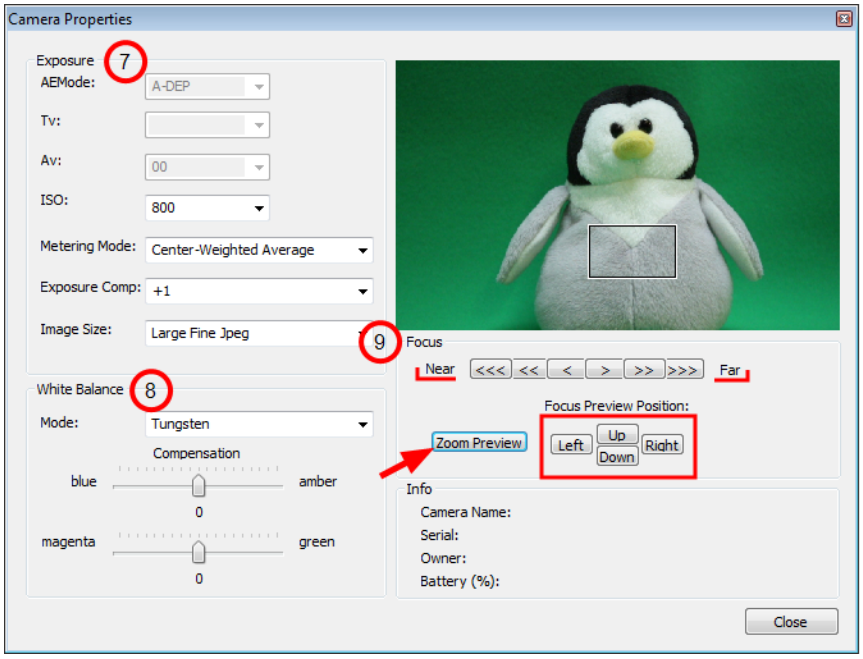
4. If you are using a scanner with a WIA driver (Windows Image Acquisition), the Resolution list will be enabled. From the list, select the resolution at which you want to scan your images.

5. If you want to smooth out some of your colours, select the **Noise Reduction** option. If you want to capture more detail, leave this option deselected.
6. Click **Properties**.

   The Camera Properties window appears.

   This is an example of a typical Camera Properties window.

The Camera Properties page is different for every capture device. The information displayed on that page comes from the device itself and therefore contains different options for each device.



The numbers in this diagram refer to the following steps.

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 is changed on your camera. If you change a setting on your camera, it is also changed in the software.
8. In the White Balance section, play with the options from the Mode list and select the one relating to your lighting set up, or until the colours in the preview window displays evenly balanced colours. Make fine 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, click **Zoom Preview** to view that section in detail. Use the Near and Far increments to make finer adjustments.
10. Click **Close**.

Light Table and Onion Skin

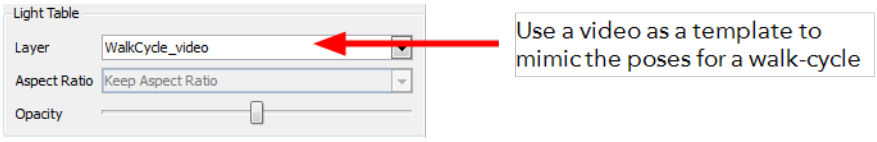
The Light Table feature for stop-motion image capture can be used in two different ways: as a light table or as an onion skin option. As a light table, it can be used to display a series of images, such as JPEGs of a walk-cycle, behind the live image in the preview window. This can be useful if you want to use a template for the stop-motion

poses you need. As an onion skin option, the preview window displays 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 list. Choosing the same layer as the one you are capturing the images on enables the Onion Skin option. Selecting any other layer serves as a reference when capturing images for the stop-motion. Only image (bitmap) layers, as opposed to drawing (vector) layers, appear in the list.

To use the Light Table feature:

1. From the Layer list, select the layer that you want to see in the preview window.



2. If the images you are capturing do not have the same ratio as your Toon Boom Studio 8.1 User Guide project (for example 16:9 instead of 3:4) the Aspect Ratio list is 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.

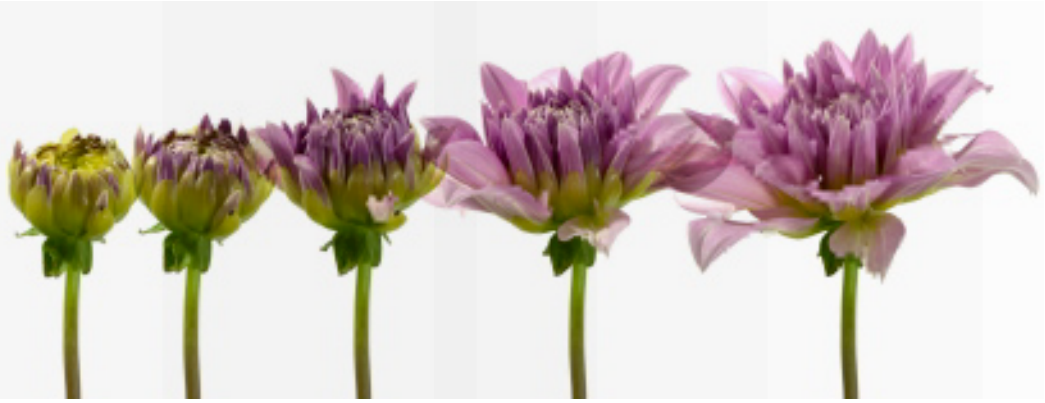
To use the Light Table feature as an Onion Skin option:

1. Capture the first image without specifying the Layer to be used as a reference (in the Light Table section, the Layer list is set to Disabled).

2. Once the first image is captured, go to the Layer list and select the layer on which the image has been captured.
3. If the images that you are capturing do not have the same ratio as your Studio project (for example 16:9 instead of 3:4), the Aspect Ratio list is 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.

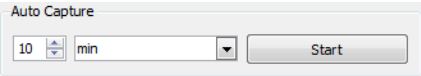
Capture Features

Auto Capture



Although some motions are easy to record by posing and reposing a figure while taking snapshots 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:

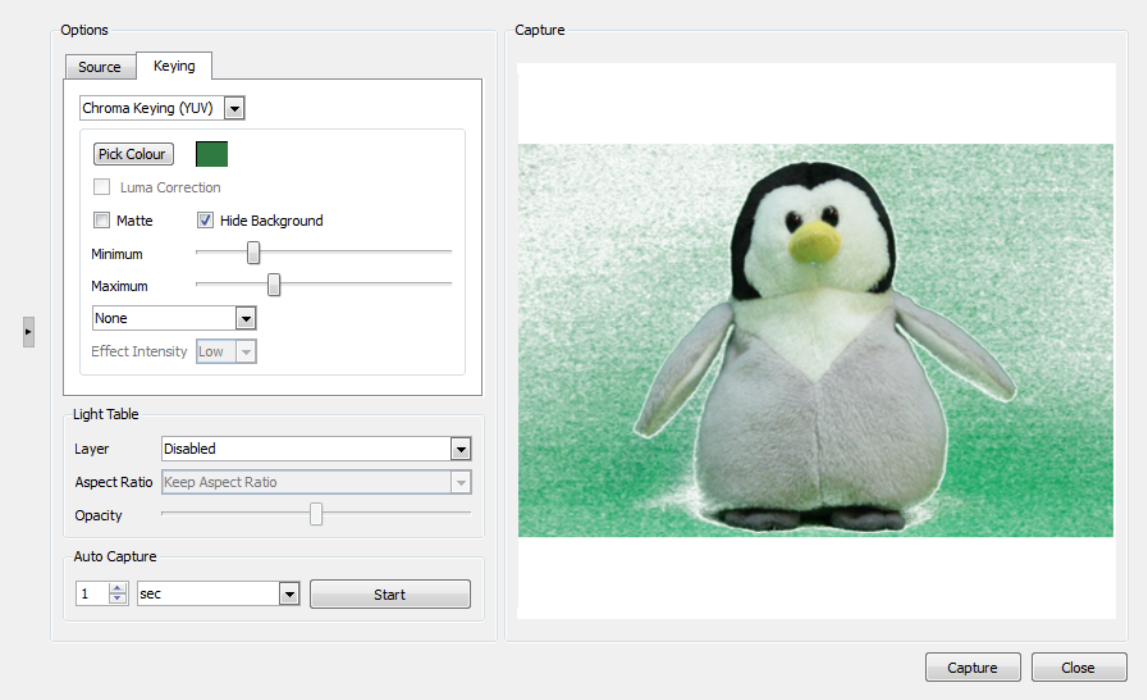


1. In the Auto Capture section, select a number of increments from the first drop-list.
2. From the second drop-list, select the units (msec, sec, min, hour, day).
3. When ready, click **Start**.

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 the **Show/Hide Capture Options** button to expand this window.

Colour Keying

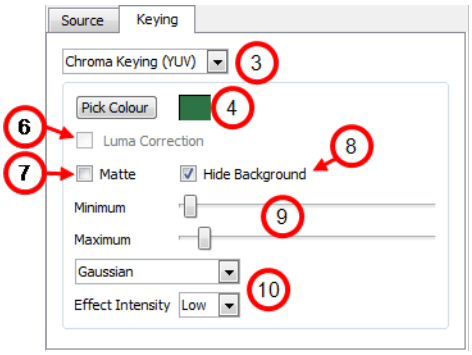


One of the ways that Studio has ensured greater flexibility for your stop-motion projects is by including a Colour Keying feature. With this feature, you can easily remove the background around your character and instead replace it with a hand-drawn background.

In order for the Colour Keying feature to work, it is essential to 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. Select the **Keying** tab.



The numbers in this diagram refer to the steps shown below.

3. From the first list, select a 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 want 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 human perception than when using an RGB representation. Choose YUV if your recording device conforms to certain YUV standards.

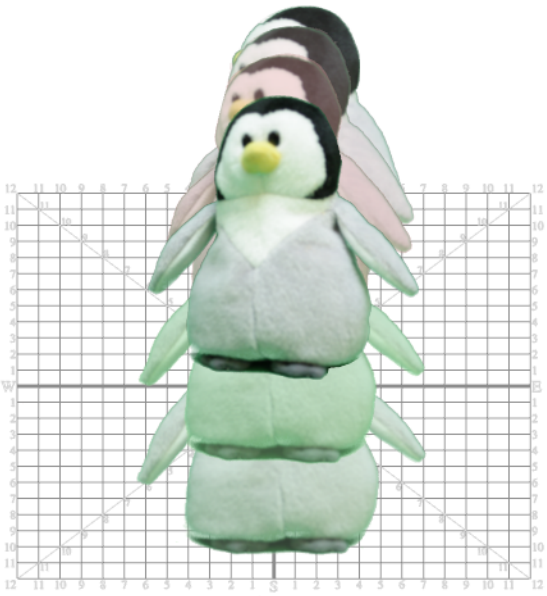
- **Chroma Keying (RGB)**: The RGB colour model is an additive colour model in which red, green, and blue light are added together in various ways to reproduce a broad array of colours. RGB is a device-dependent color space: different devices detect or reproduce a given RGB value differently. Thus an 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, 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 **Pick Colour**.
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 appears in the swatch area beside the Pick Colour button.

   Your preview window comes alive with dancing pixels.
6. If you selected Luma Keying as the keying type, you can also select Luma correction to help even out the image so it is easier to extract a drawing from the background.
7. If you selected one of the chroma keying types, select the Matte option if you want to render the preview window achromatic. This option makes the keying process visually easier by seeing the selected portion being reduced to black and the keyed out portion being reduced to white.
8. Select the **Hide Background** option, if you want to see which part of the image is 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 are now ready to capture images for you stop-motion animation.

Image Capture

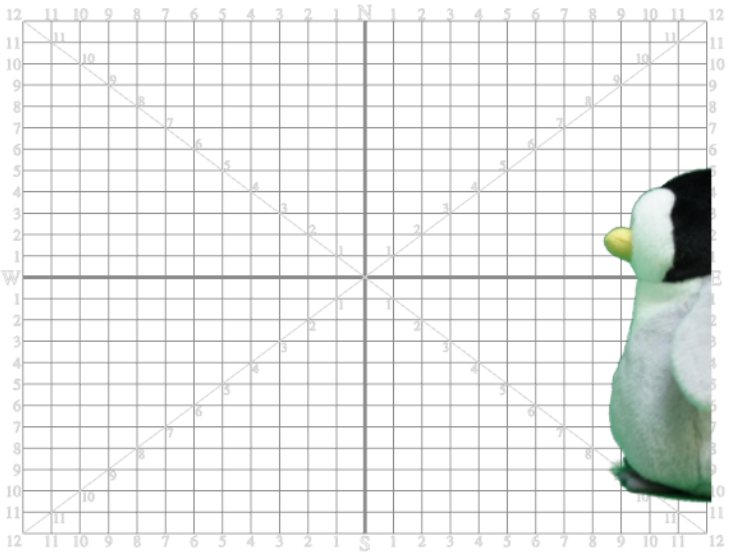


This is the easiest part of the stop-motion animation process. Once you start capturing, your images are recorded on an Image Capture layer as a string of frames on the Timeline.

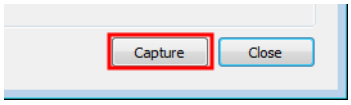
If you are using a video camera, it will act as a still-frame camera; it only captures the single images within its field of view.

To perform an image capture:

1. If it is not already open, select **Acquire > From Capture Device** from the File menu to open the Image Capture window.
2. Set up your first pose. Use the preview window and the recording device viewfinder to make sure that it is correctly framed.



3. When you are ready, click **Capture**.



4. Reposition your character and/or other elements on the stage. The smaller the movement, the smoother the animation.

5. Click **Capture**.

   At this point, the Timeline view looks something like this. Each frame represents an image capture.

6. Repeat this process until you have completed your motion sequence.
7. When you are finished, click **Close**.

Capturing Images in an Existing Layer

Instead of recording all the images that you need in one session, you may decide to divide the action sequences into different recording sessions. However, if you do this, you may notice that each time you close the Capture window and start it again, the software automatically creates a new Image Capture layer.

To add image captures onto an existing layer:

1. In the Timeline or Exposure Sheet view, right-click on the empty cell where you would like the new captures to begin and select **Import and Vectorize > From Capture Device**.

   The Capture window opens.
2. Continue with the capture process.

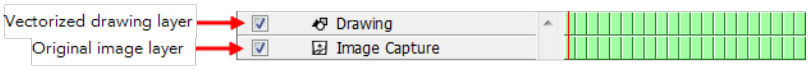
Vectorization and Clean-up

After recording your stop-motion animation, you may notice that your character was not as cleanly keyed as you would like. The fastest way to resolve this 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 on one of the cells in the Image Capture layer and
2. select **Convert Element to Vector**.

   A new Drawing layer appears above the original layer with the same number of cells 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 the bitmap fill. To quickly reduce the amount of points to clean, using the Contour Editor tool, select the drawing to clean and select **Tools > Smooth**.

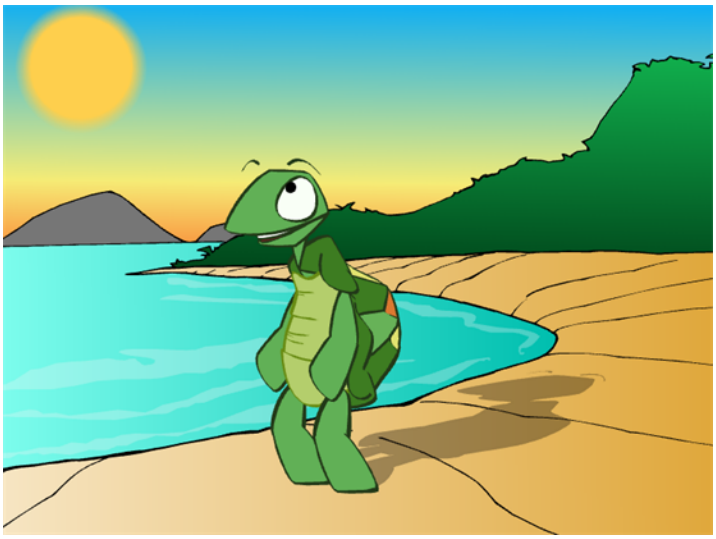
5. Scrub through your animation to check for any anomalies in the contour of your character.

Chapter 16: Enhancing with Effects

The most important part of animation is creating lifelike 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 the next page
- Blockbuster and Forces of Nature Effects
- Disabling All Effects on page 510

Special Effects



Studio's special effects let you add a shadow to your character that follows its every movement, soften the edges of atmospheric elements, such as the sun and clouds, as well as create a beautiful sunset and much, much more.

- Previewing Effects below
- Blur Effect on page 470
- Colour Transform Effect on page 473
- Feather Edge Effect on page 477
- Drop Shadow Effect on page 480
- Clipping Effect on page 484
- Shake Effect on page 489

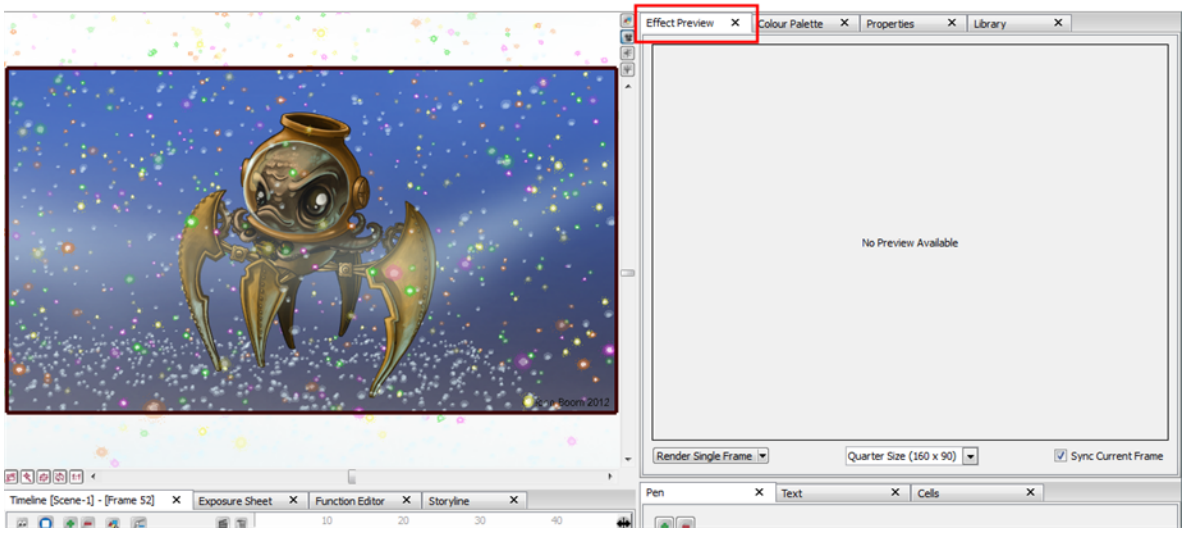
Previewing Effects

To see the final look of some of your effects such as the blur, the system needs to calculate and render them. The Camera view shows a simple version of your effects so you can play back your animation quickly. Therefore, to see your final effects as you adjust them, you need the Effect Preview view which gives you the ability to render the current frame and display it in a window.

Toon Boom Studio will keep in memory 200MB of rendered images. (~25 frames in HD, ~100 is half HD and ~400 in quarter HD).

To open the Effect Preview view:

1. Select **Window > Effect Preview**.
2. Grab the floating view and dock it beside your Camera view.

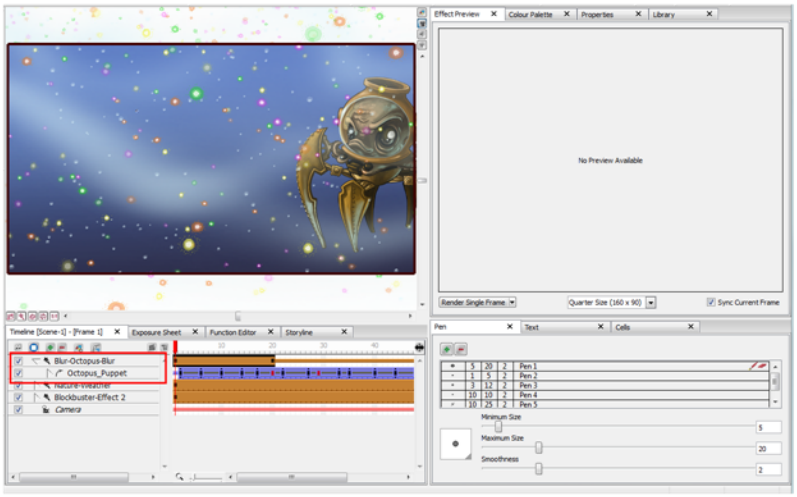


The Effect Preview view allows you to render a single frame, a frame range or your whole scene to see your effects. You can render the images to a quarter, half or full size of your project depending on how much memory you want to use.

To preview a blur effect:

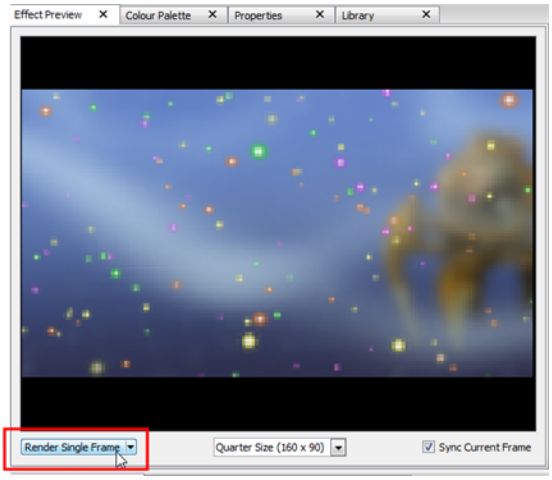
1. In the Special Effects toolbar, click the Blur Effect button.

2. In the Timeline view, parent the drawing layers that you want to blur to the Blur effect.

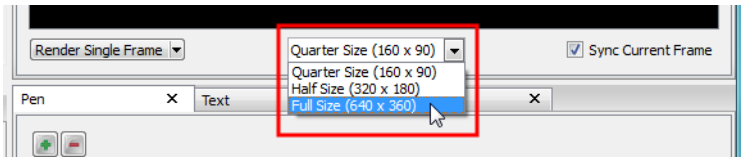


3. In the Effect Preview view, click **Render Single Frame**.

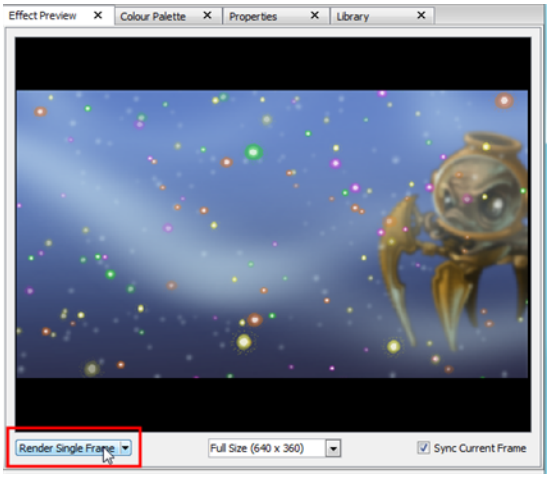
   The current frame preview appears at a quarter of the project's size.



4. For a better quality render, in the Size list, select **Half Size** or **Full Size**.

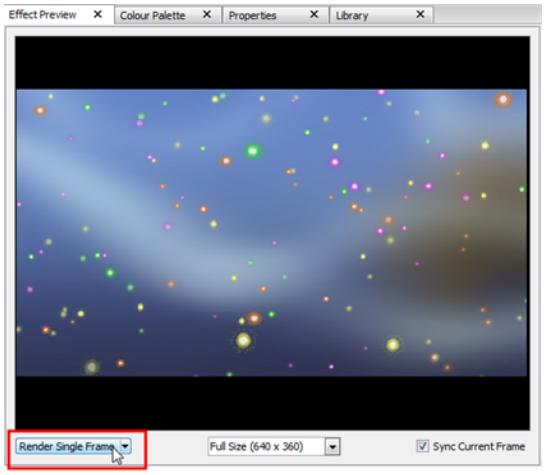


5. Click **Render Single Frame** to update the preview.

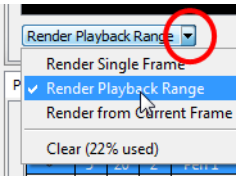


6. In the Properties view, increase the Radius value.

7. In the Effect Preview view, click **Render Single Frame**.



8. In the Render drop-down menu, select **Render Playback Range** to render your whole scene or the playback range section, if you customized it. Select **Render from Current Frame** if you want to render all the frames starting from the current frame.

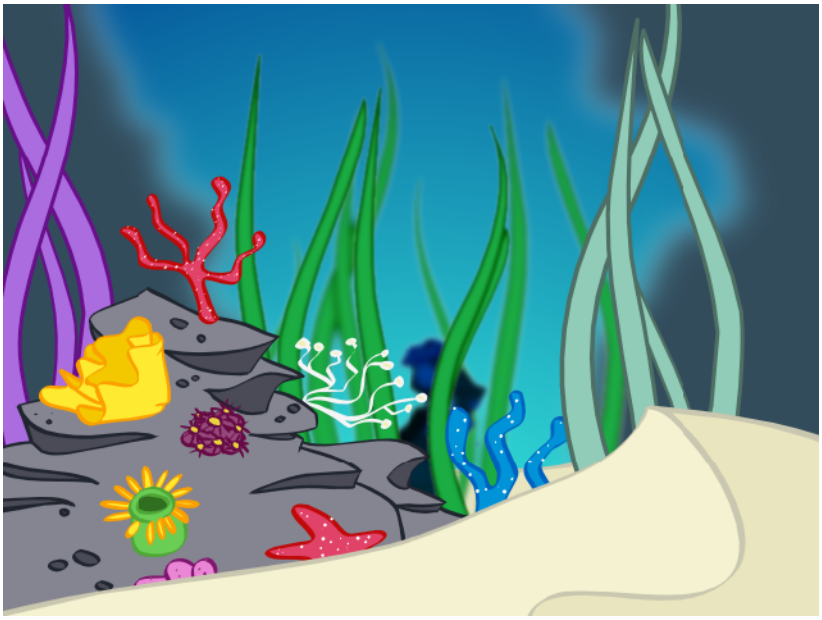


9. Once you have rendered a range of images, you can play them back by pressing the Play button in the Interactive Playback toolbar (Top toolbar on Mac OS X). If you want to play back your scene without playing back the rendered frames, deselect the **Sync Current Frame** option. This will allow you to play back only the Camera view and leave the Effect Preview window at the current frame. To play back your rendered frames, select the **Sync Current Frame** option.

10. Once you have rendered a range of images, you can play them back by pressing the Play button in the Interactive Playback toolbar (Top toolbar on Mac OS X). If you want to play back your scene without playing back the rendered frames, deselect the **Sync Current Frame** option. This will allow you to play back only the Camera view and leave the Effect Preview window at the current frame. To play back your rendered frames, select the **Sync Current Frame** option.

11. From the Render drop-down menu, select **Clear** if you want to delete the previously rendered frames to clear some memory. Toon Boom Studio will keep up to 200MB of images in memory. If the rendering buffer is full, select this option to empty it.

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 the Blur Effect button.

   You can also add the Blur effect from the Timeline toolbar.

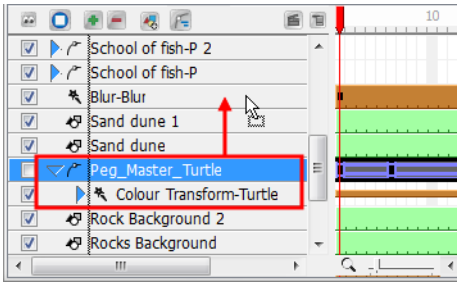
   - In the Timeline view, click the Add New Element button.

   The New Elements dialog box opens.

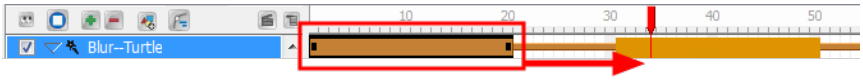
   - From the Type list, select **Blur Effect**.
   - In the Name field, rename the effect appropriately.
   - Click OK.

   A new Blur layer appears in the Timeline view.

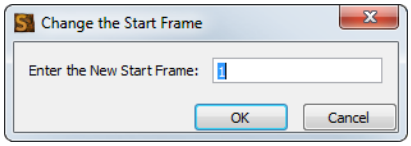
2. In the Timeline view, select the drawing layer that you would like to attach to the Blur effect and drag it onto the Blur effect layer.



3. Double-click the 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 the Timeline view. 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.

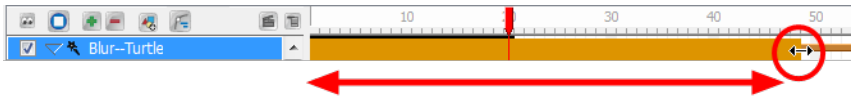


You can also right-click anywhere on the effect's cells and select **Change Start Frame**.

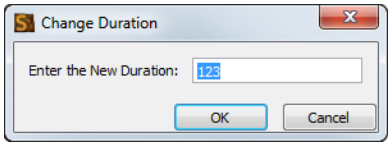


Enter the start frame that you would like into the Enter the New Start Frame field and click OK. The entire row of effect cells will be shifted down the Timeline view.

5. 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.

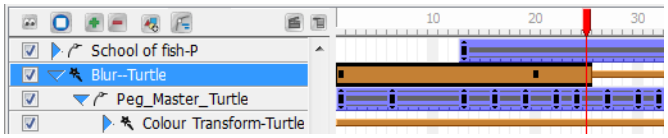


You can also right-click anywhere on the effect's cells and select **Change Duration**.

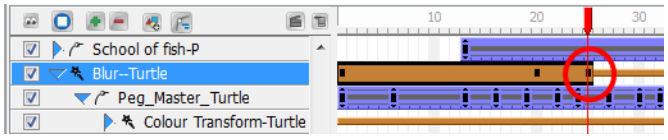


Enter the duration that you would like the effect to last for in the Enter the New Duration field and click OK. The exposure of the effect will be extended or shortened depending on the value entered.

6. In the Timeline view, drag the red playhead to the frame on your effect layer where you would like to add a keyframe.

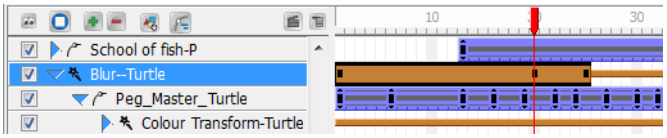


In the Tool Properties panel for the Blur effect, click the Add Blur Effect Keyframe button.

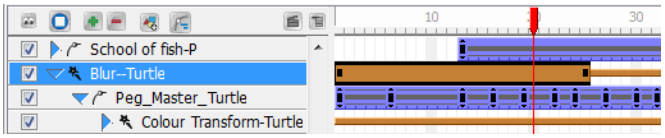


A new keyframe is added to the chosen location.

7. In the Timeline view, drag the red playhead to a frame on your effect layer where you would like to delete a keyframe.

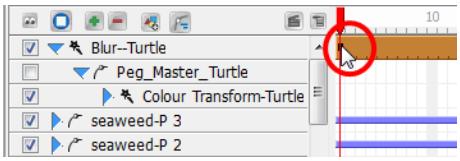


In the Tool Properties panel for the Blur effect, click the Delete Keyframe button.



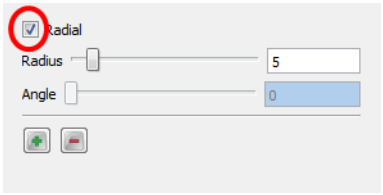
The keyframe is deleted from the chosen location.

8. In the Timeline view, go to the frame containing your first keyframe and select the Blur effect layer.

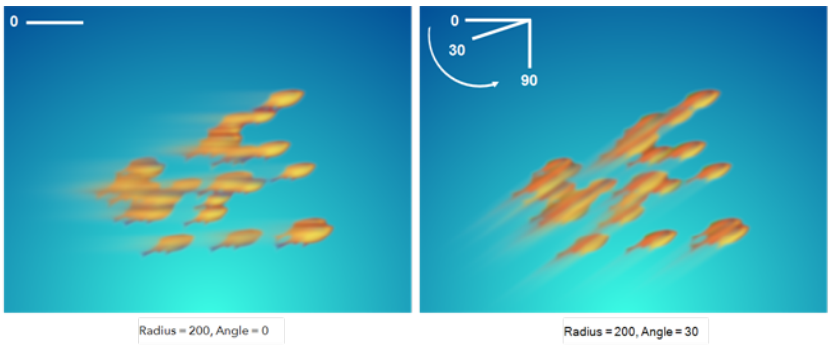


9. In the Properties view, move the Radius slider to increase or decrease the Blur Radius, or simply enter a value directly into the field. You can enter decimal increments for more precision.

10. Deselect the **Radial** option 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.



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.

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—see Export Movie on page 525.

Colour Transform Effect

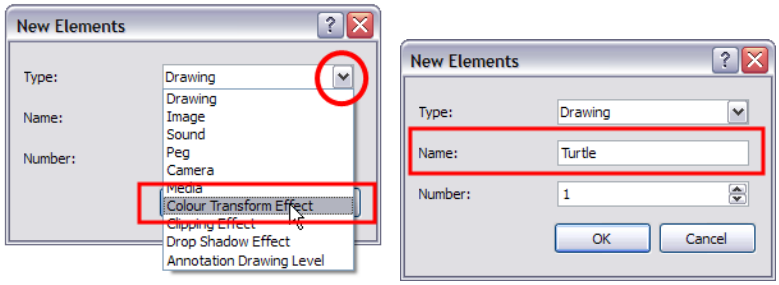
If you animate a sunrise, a distant object moving closer to the camera or something appearing and disappearing etc., you can use the Colour Transform effect to animate a colour or transparency change.

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.

The Colour Transform effect also works with the Drop Shadow effect. Any colour changes you make can be confined to the object, applied to an object`s shadow, or both—see Drop Shadow Effect on page 480.

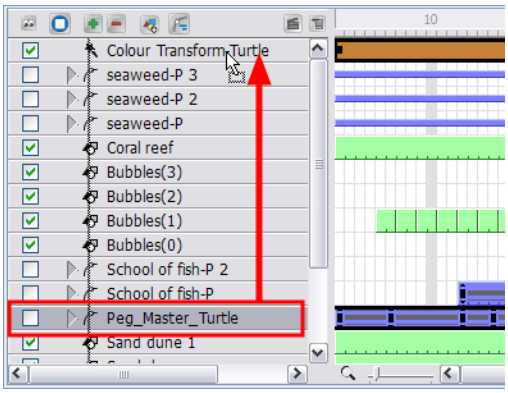
To create a Colour Transform effect:

1. Do one of the following:
   - In the Special Effects toolbar, click the **Colour Transform Effect** button.
   - In the Timeline view, click the **Add New Element** button. In the New Elements dialog box that opens, select **Colour Transform Effect** from the Type list. Rename the effect appropriately and click OK.

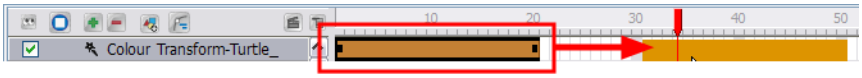


   A new Colour Transform layer appears in the Timeline view. By default, the effect has a 20 frame transition with two keyframes, one at the beginning and one at the end. No values are entered in these keyframes.

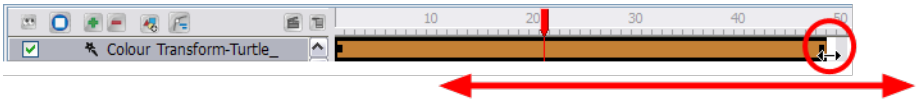
2. In the Timeline view, select the layers you want to apply the colour transformation on and drag them ONTO the Colour Transformation layer.



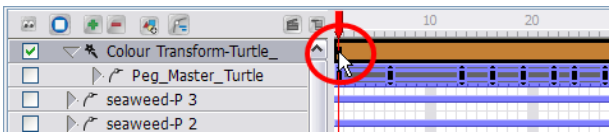
3. If you do not want the colour transformation to start at the first frame, select the transition cells and drag them to the desired starting frame.



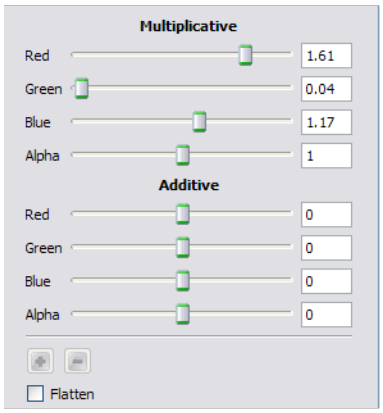
4. To make the transition to be shorter or longer, select the end of the transition, wait until the double arrow cursor appears, then pull or push it to adjust the length.



5. In the Timeline view, go to the frame containing your transition first keyframe and select the Colour Transform layer.



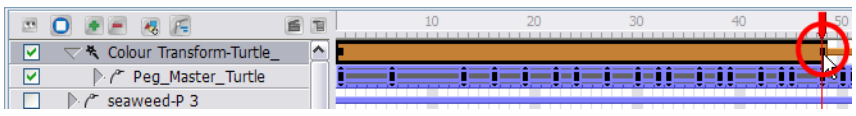
6. In the Properties view, adjust the colour parameters using the Additive or Multiplicative settings. You can adjust the Red, Green, Blue and Alpha (transparency) parameters.



- 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.

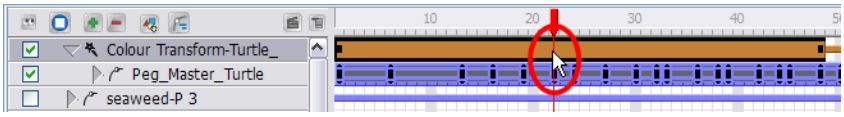
- The more you increase the Additive values, the more red, green or blue will be mixed in your original colours. The more you decrease the Additive values the more red, green or blue will be removed from your colours. You can end up with a white, black, red, green, yellow or blue drawing using these parameters.

7. In the Timeline view, go to the last frame of the transition and select the **Colour Transform** layer.



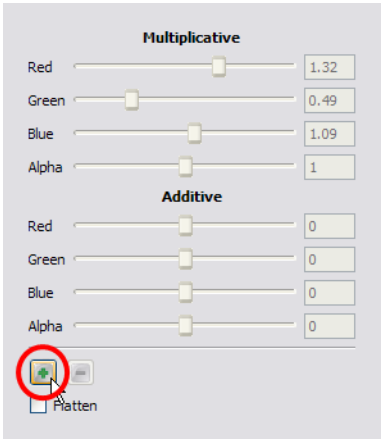
8. In the Properties view, adjust the colour parameters for the second colour keyframe.

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 the Add Keyframe button.

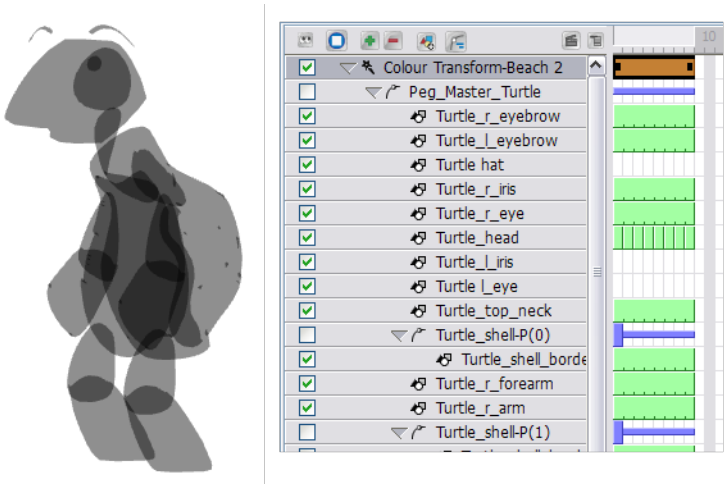
    - You can use the Delete Keyframe button to remove a keyframe you may have added earlier. Note that you cannot delete the first and last keyframes.



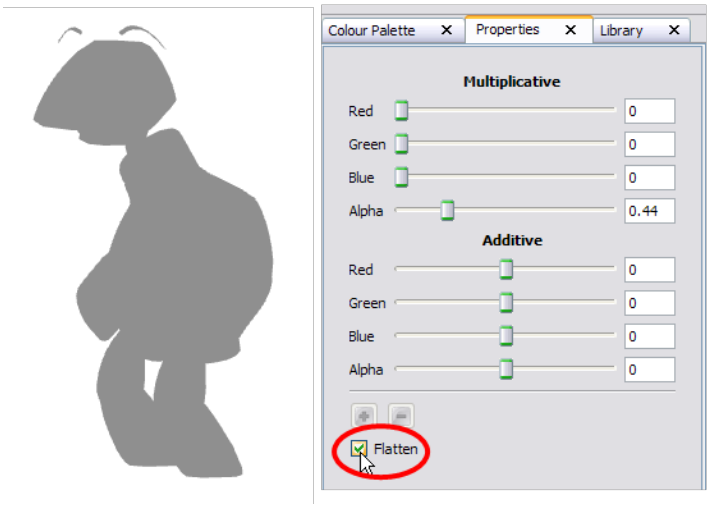
In the Properties view, adjust the colour parameters.

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.

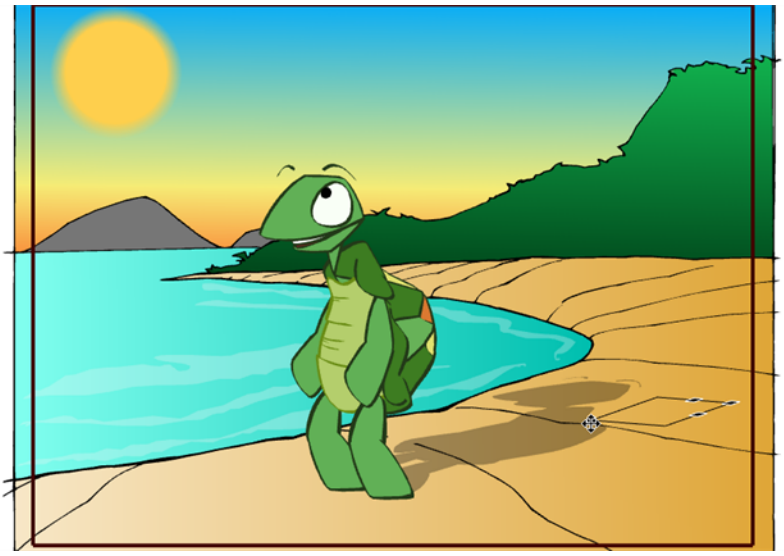


    - In the Properties view, select the **Flatten** option for a uniform result.



13. Play back your scene to see the final result.

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.

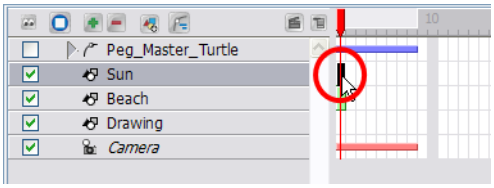
The Feather Edge effect is different from the Blur effect. A Blur effect transforms your image into a bitmap image. The Feather Edge effect remains vector-based.

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.

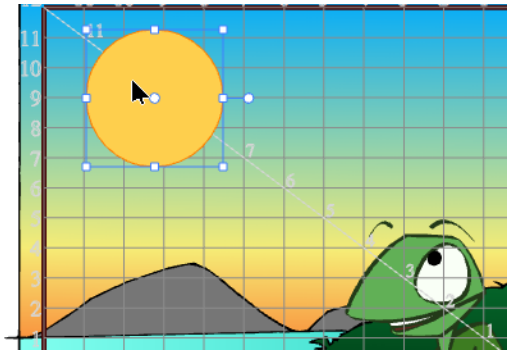
To create a feather edge:

1. In the Timeline view, select the cell containing the drawing on which you want to apply a feather edge.



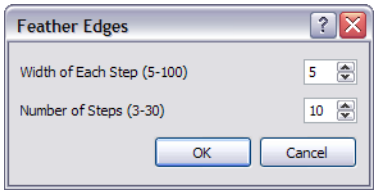
2. In the Drawing Tools toolbar, select the Select tool.

3. In the Camera or Drawing view, select the drawing area you want to apply a feather edge on.

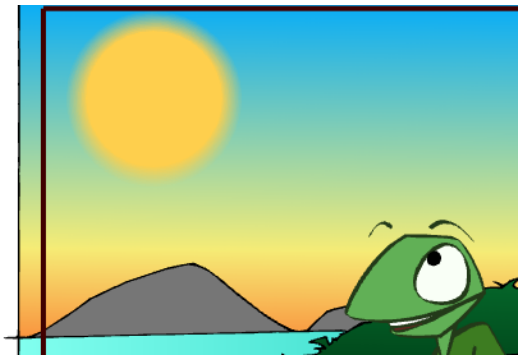


4. Select **Tools > Feather Edges**.

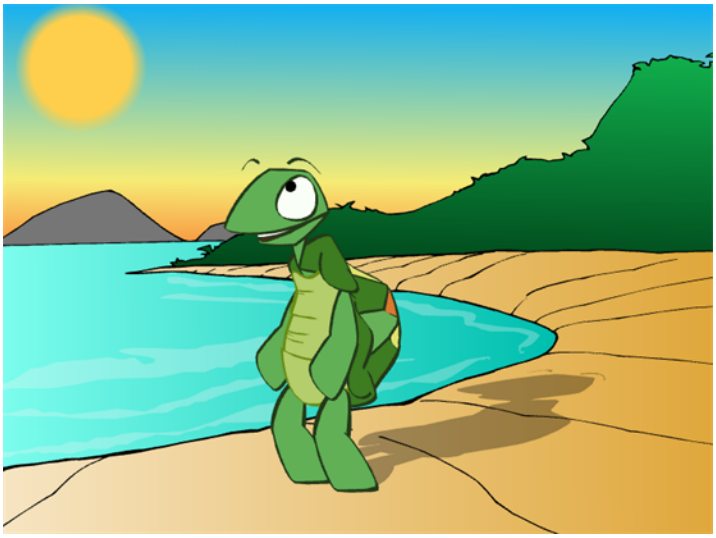
   The Feather Edges dialog box opens.



5. In the Width of Each Step field, enter the width of each rim around the drawing edge.
6. In the Number of Steps field, enter the number of rims around the edge of your drawing.
7. Click OK.



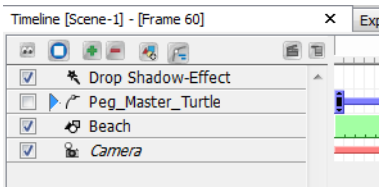
Drop Shadow Effect



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 make some modifications afterward.

To create a Drop Shadow effect:

1. In the Special Effects toolbar, click the Drop Shadow Effect button.

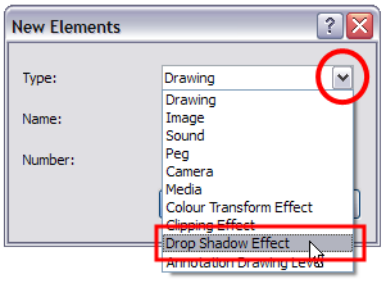


You can also add the Drop Shadow effect from the Timeline toolbar.

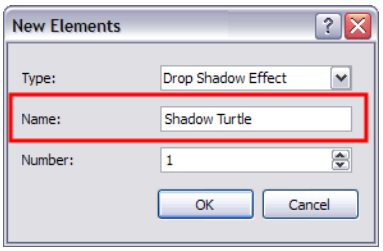
- In the Timeline view, click the Add New Element button.

The New Elements dialog box opens.

- From the Type list, select **Drop Shadow Effect**.

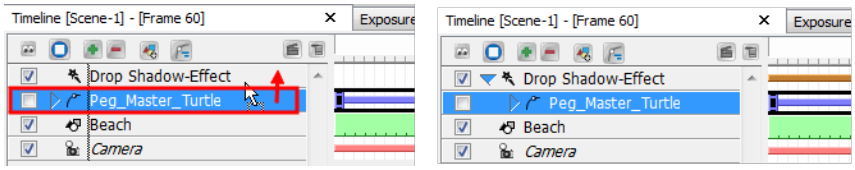


- In the Name field, rename the effect appropriately.

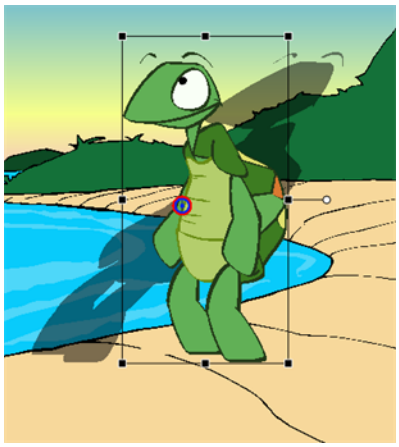


- Click OK.

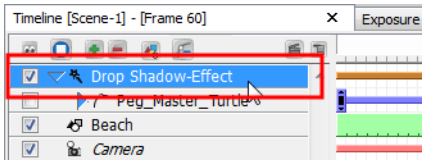
2. Drag the selected layer **ONTO** the Drop Shadow layer.



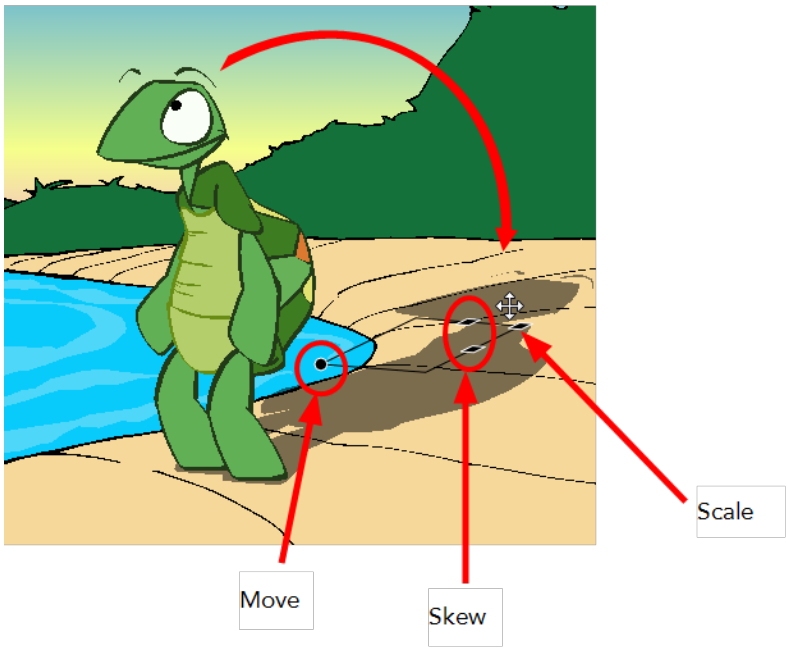
The shadow appears in the Camera view.



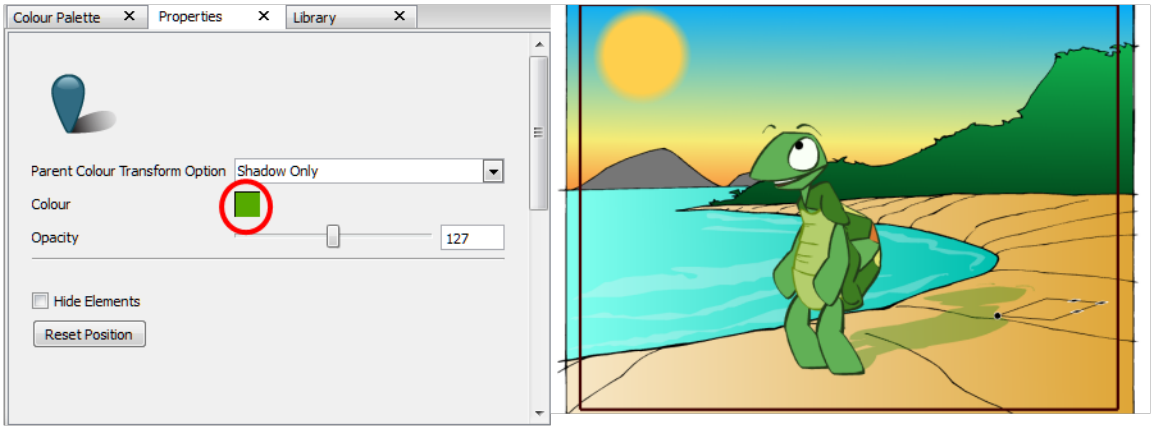
3. In the Timeline view, select the **Drop Shadow** effect.



4. In the Camera view, click on the shadow's anchor points and position the drop shadow.

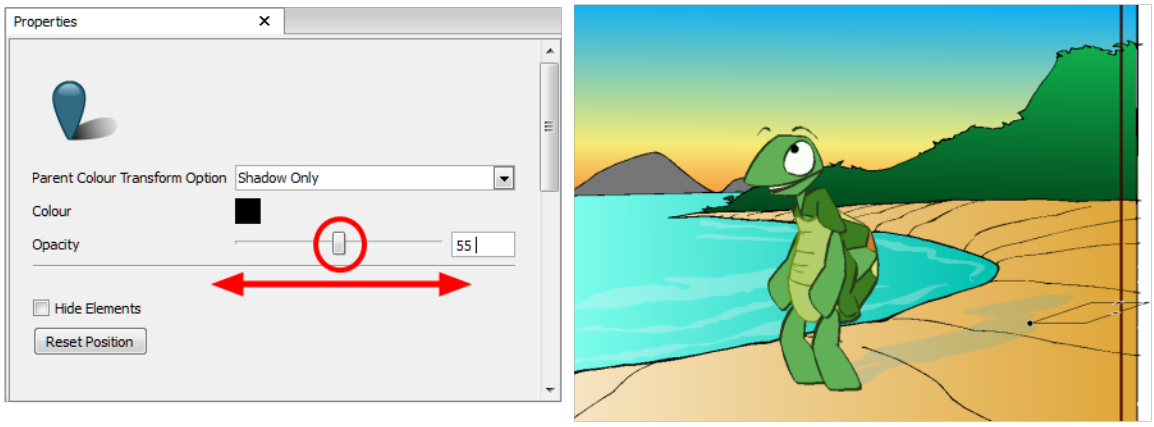


5. In the Properties view, click the colour swatch and adjust the colour.

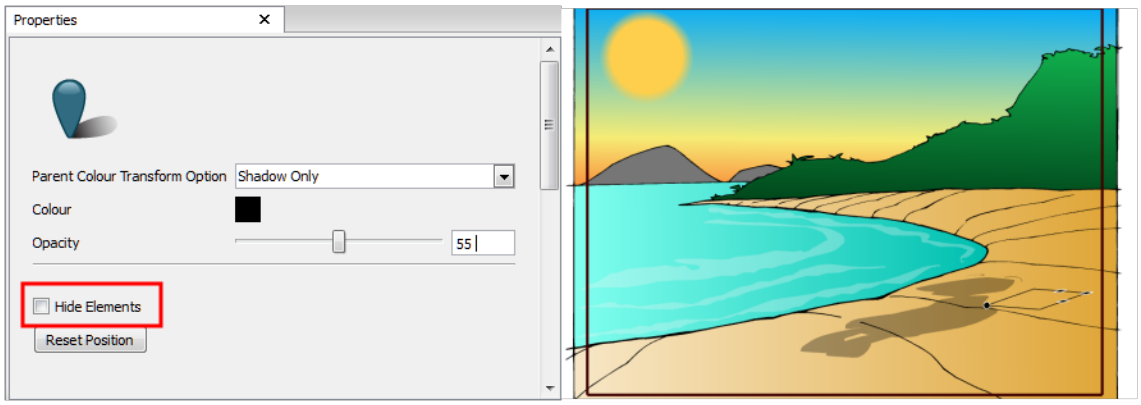


If you're using the Colour Transform effect, the colour changes you make can be applied to the drawing, shadow, or both. You can select these options from the Parent Colour Transform Options list.

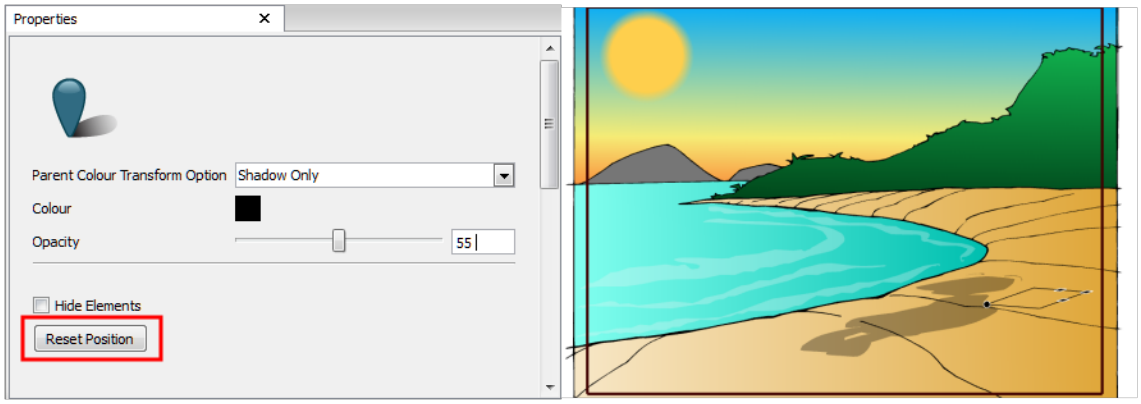
6. In the Properties view, adjust the **Opacity** slider to modify the shadow's transparency.



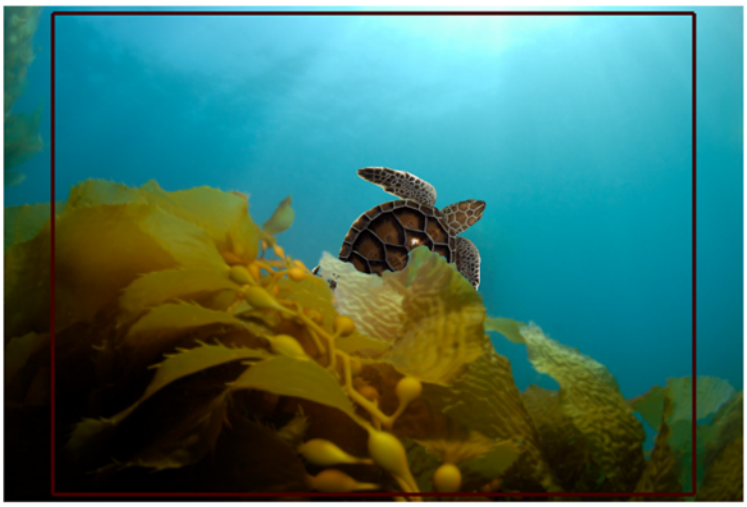
7. In the Properties view, select the **Hide Elements** option if you want to temporarily hide the original drawing while you reposition its shadow.



8. In the Properties view, click **Reset Position** if you want to cancel any position modifications you made to the shadow.

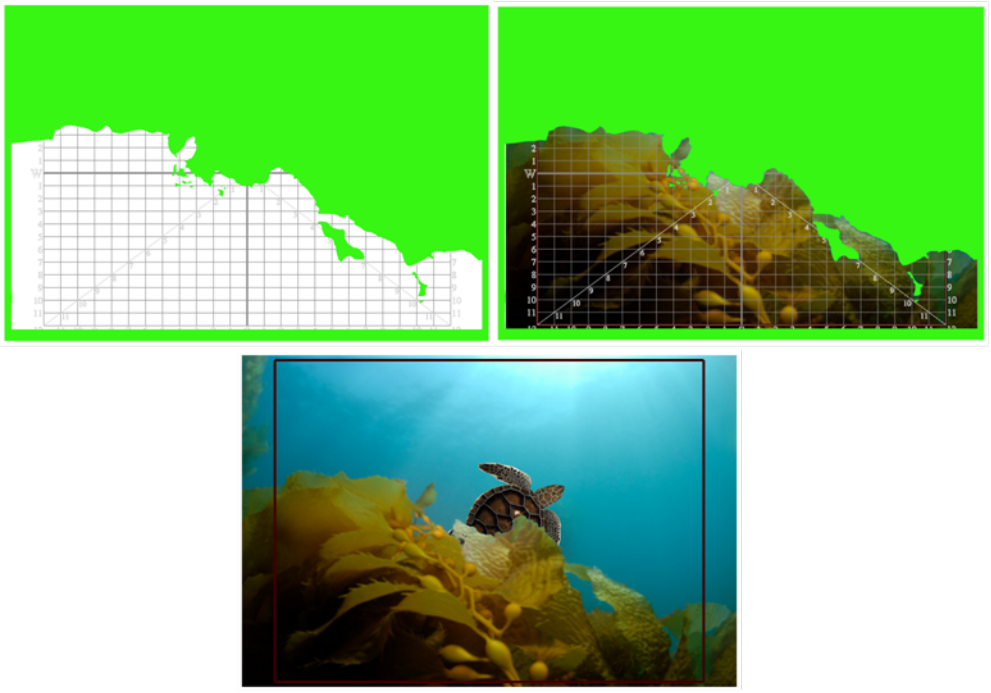


Clipping Effect



The Clipping effect can also be called a *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.

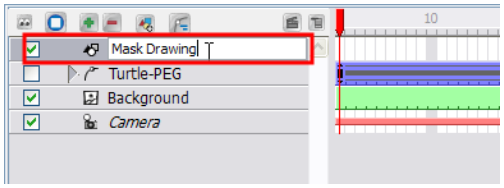
To do so, you will need to create a drawing of the zone where you want your animation to appear and connect it to a Clipping effect. This drawing is called a *mask*. The Clipping effect hides any portion of your animation outside of the mask drawing you did. It will hide it, not delete it. Your animation remains intact.



To create a Clipping effect:

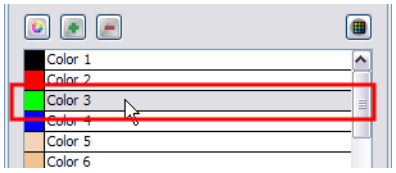
1. In the Timeline view, click the Add Drawing Element button to add a new layer for your mask drawing.

2. Double-click on the new layer and rename it **`Mask Drawing`**.

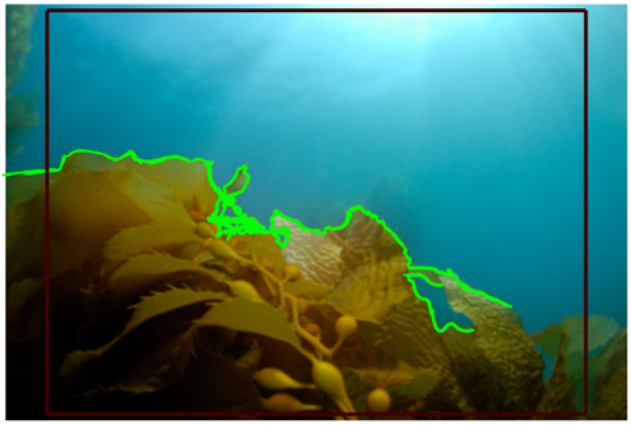


3. In the Tools toolbar, select the Brush tool.

4. In the Colour Palette view, select any bright colour.

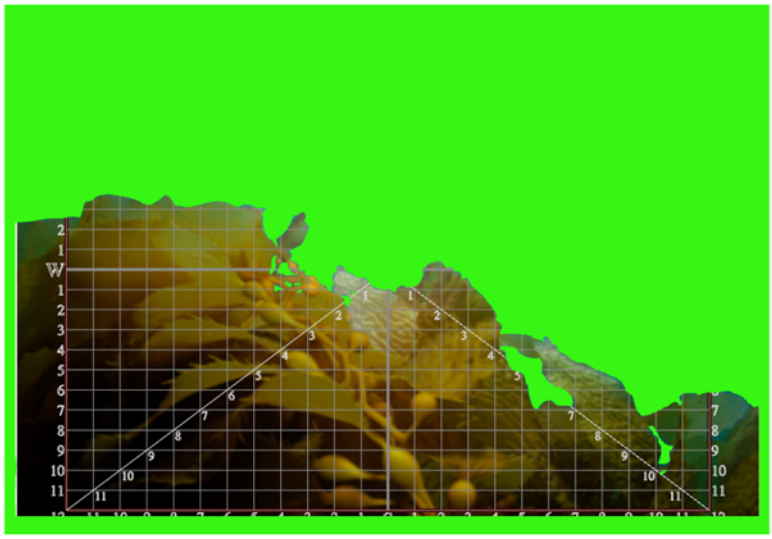


5. In the Camera view, trace the section that you want to remain visible in your animation.



6. In the Tools toolbar, select the Paint tool.

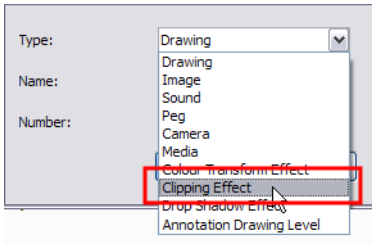
7. In the Camera view, paint the closed zones of your mask drawing.



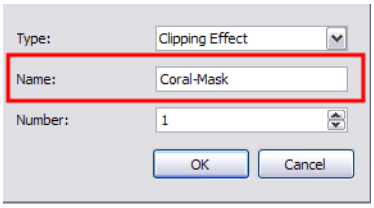
8. In the Effects toolbar, click the Clipping Effect button.

You can also add the Clipping effect from the Timeline view.

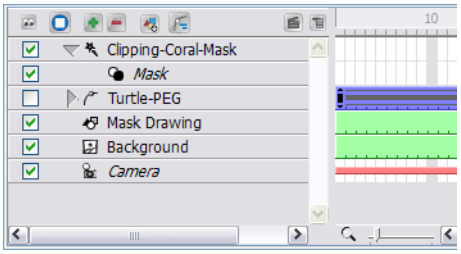
- In the Timeline view, click the Add Element button.
- The New Elements dialog box opens.
- In the Type list, select the Clipping Effect layer.



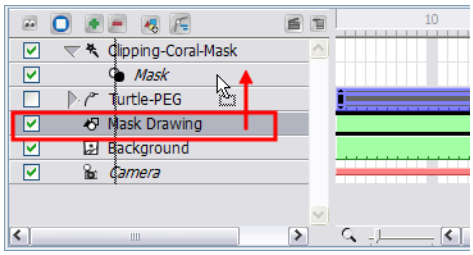
- In the Name field, rename the effect appropriately.



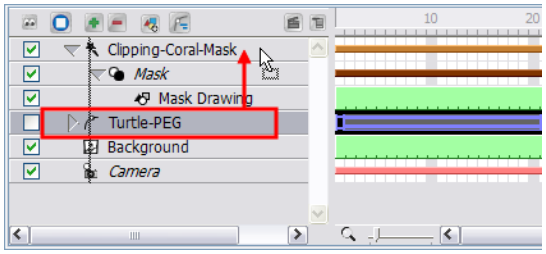
- Click OK.



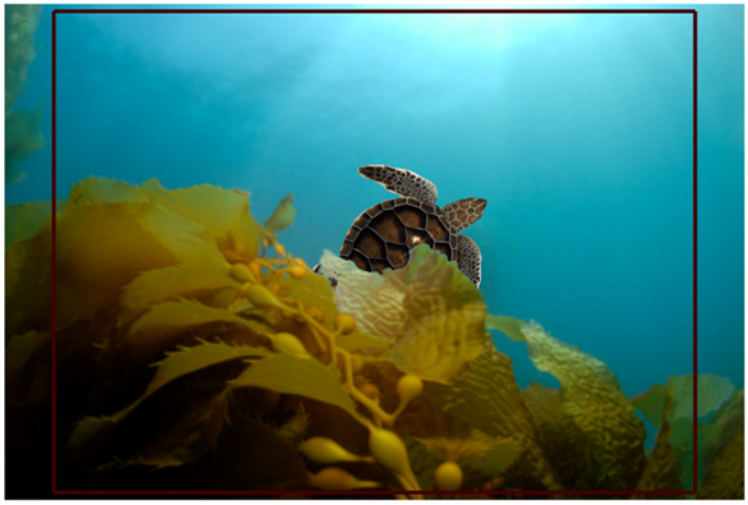
9. In the Timeline view, select your Mask drawing and drag it **ONTO** the Clipping's Mask layer.



10. Select your image or animation and drag it **ONTO** the Clipping Effect layer.



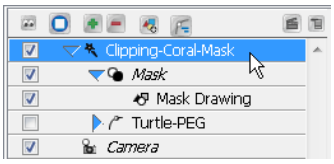
11. Play back your animation. You should now see only the portion you want to be visible.



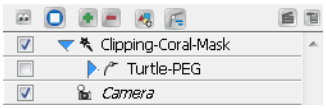
If you feel that your Timeline view is too crowded with the effects that you are adding, you can hide the mask elements of your Clipping effects. This will hide the mask layers in the Timeline view without disabling the effect.

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.**

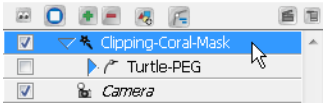


To hide the mask elements of all Clipping effects:

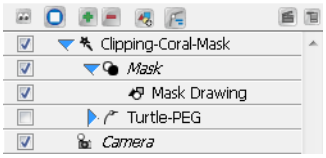
1. From the Timeline view's contextual menu, select **Display > Hide All Effects Parameters**. You can also select **View > Effects > Hide All Effects Parameters.** Once you chose to hide the effect parameters, you can easily display them again.

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.



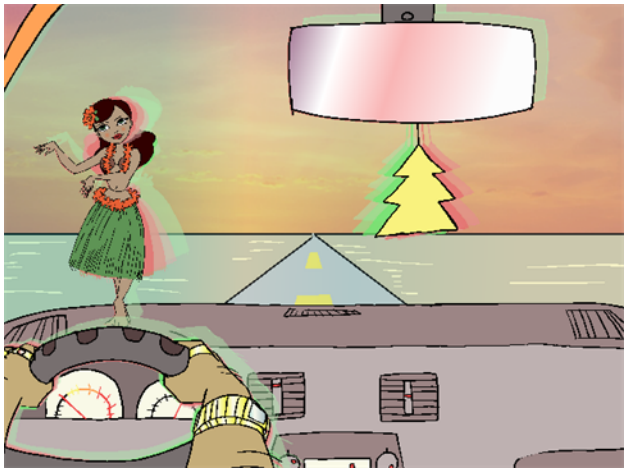
2. From the Timeline view's contextual menu, select **Display > Show Effect Parameters**. You can also select **View > Effects > Show Effect Parameters.**



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.**

Shake Effect



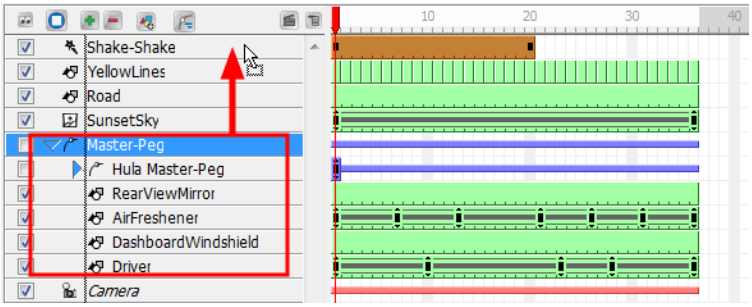
With the Shake effect, an animated drawing or static element, such as a character or landscape, can be made to shake. This effect can be used to imitate earthquakes, camera shakes, or a character who is freezing on a cold winter day.

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:

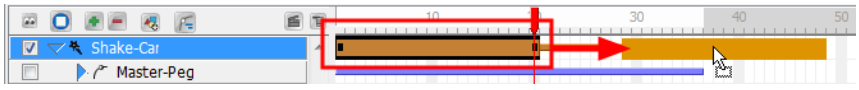
1. In the Effects toolbar, click the Shake button.

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.

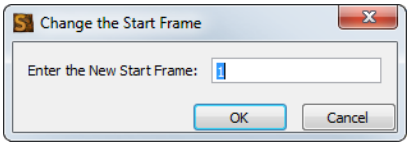


3. Double-click on your Shake effect layer to rename in accordance with the Drawing or Peg layer that is attached to it. This is good practice, as you may want to add more than one Shake effect to your timeline. You may want to add more than one Shake effect in order to have a shake occur on the x-axis 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.

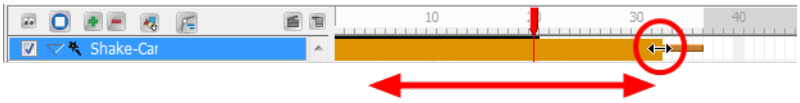


You can also right-click anywhere on the effect's cells and select **Change Start Frame**.

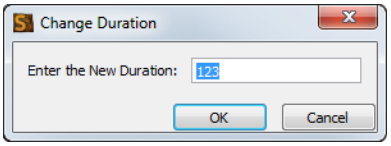


Enter the start frame that you would like into the **Enter the New Start Frame** field and click OK. The entire row of effect cells will be shifted down the Timeline.

5. 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.

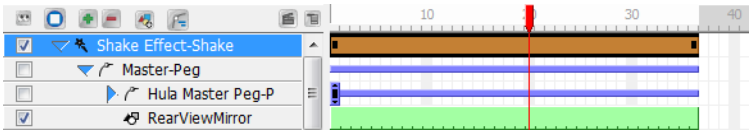


You can also right-click anywhere on the effect's cells and select **Change Duration**.

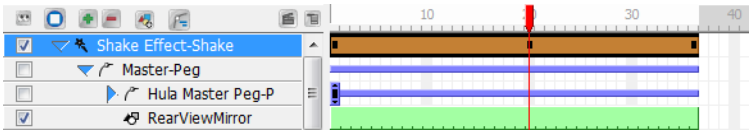


Enter the duration that you would like the effect to last for in the Enter the New Duration field and click OK. The exposure of the effect will be extended or shortened depending on the value entered.

6. In the Timeline view, drag the red playhead to a frame on your effect layer where you would like to add a keyframe.

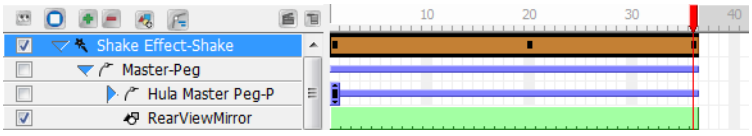


In the Tool Properties panel for the Shake effect, in the Dynamic Parameters tab, click the Add Keyframe button.

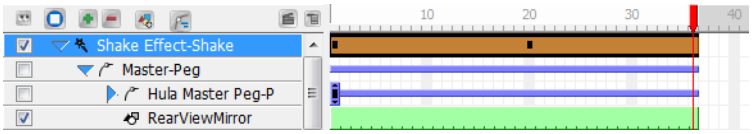


A new keyframe is added to the chosen location.

7. In the Timeline view, drag the red playhead to a frame on your effect layer where you would like to delete a keyframe.

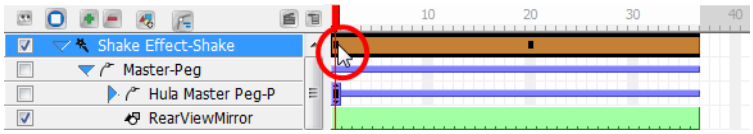


In the Tool Properties panel for the Shake effect, in the Dynamic Parameters tab, click the Delete Keyframe button.

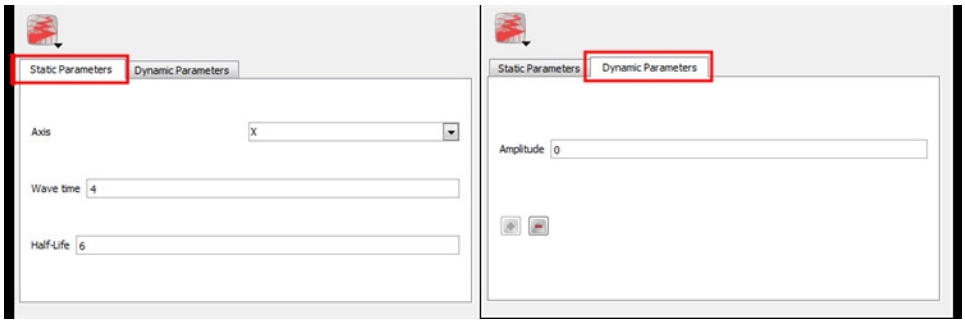


The keyframe is deleted from the chosen location.

8. 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 is 0.1
- **Great Earthquake**: Default Amplitude is 2.

Static Parameters

- **Axis**: Decide whether you want 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 both side to side and up and down.
- **Wave Time**: This indicates the length of a cycle. The smaller the number, 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, the amplitude is cut to half right away and the shake is 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. This way, the amplitude drops to half when the effect is finished. If you want the shake to gradually taper off, 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 get 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 are selected.

Blockbuster and Forces of Nature Effects

With Toon Boom Studio, you can easily create breathtaking effects. The software comes loaded with preset particle effects that you can customize as you wish and even add your own drawing to it. There are two main categories of preset effects. The Blockbuster effects allow you to add glitter, sparkles, stars, wall shatter, explosions. super-nova and other great Hollywood themed effects. The Forces of Nature effects are all about rain, storm, crazy precipitations of gummy bears, diamond, water, heavy fog, clouds and much more.

The playback speed of the preset effects is linked to the frame rate of your scene.

This section is divided as follows:

- Forces of Nature Effects below
- Blockbuster Effects on page 499
- Customizing Your Effect on page 505

Forces of Nature Effects

Effects that are the result of natural phenomenon can be among the hardest 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.

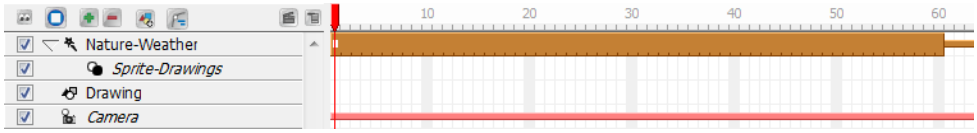
- Rain Effect on page 494
- Snow Effect on page 495
- Hail Effect on page 496
- Fog Effect on page 496

- Cloud Effect on page 497
- Volcano Effect on page 498

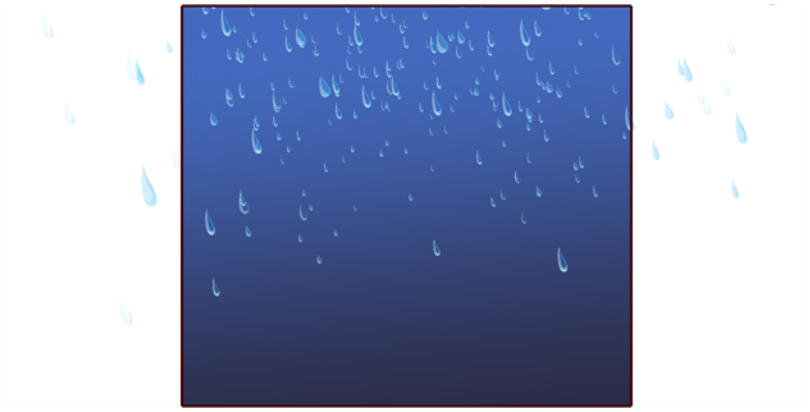
To add a Forces of Nature effect:

1. In the Special Effect toolbar, click the Forces of Nature Effect button.

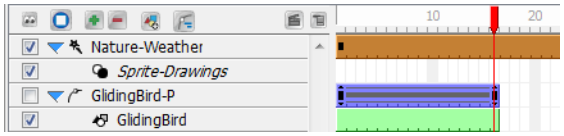
   A Forces of Nature effect layer, as well as its child, a Sprite-Drawing layer, is added to the Timeline view. A Sprite is the particle multiplied and generated by the Forces of Nature effect. In the example below, a drawing of a raindrop is used as the Sprite.

   By default, the Rain effect is selected and visible in the Camera view.

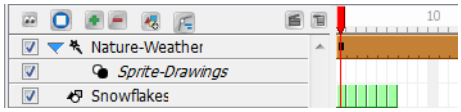
   

2. Create your own Sprite on a Drawing layer, or import an image to use as a Sprite. In the case of the Forces of Nature effects, Sprites animated using keyframes and/or pegs lose their animation. Only the original image is used.

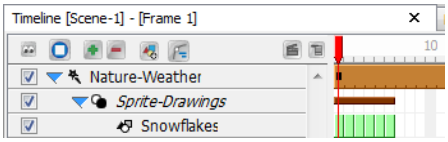
   

   Traditionally animated drawings are treated as multiple versions of the same particle type. For example, a traditionally drawn walk-cycle appears as a series of frames on the same layer. Each frame contains a slightly modified version of a character's legs and arms moving. If this layer were to be used as a Sprite, all those different drawings would be randomized and appear as non-sequential, static, singular particles in the effect.

   However, you can use this behaviour to your advantage. For example, if you want to create five types of snowflakes to be multiplied and generated, you could simply create five different drawings on the same layer. Each drawing is on their own frame.

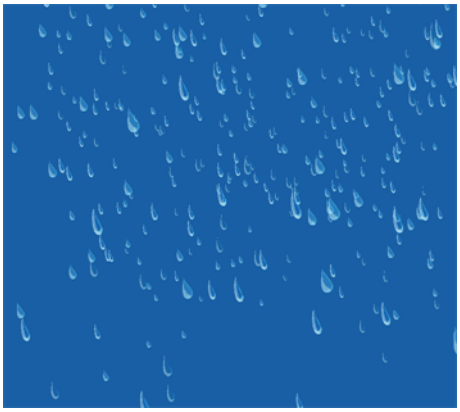
   

3. Drag your newly created Sprite layer onto the Sprite-Drawings layer to parent it. The Forces of Nature effect Sprite (unseen in the Timeline view) is automatically overridden by your custom Sprite.



If no Sprite is created for a Forces of Nature effect, the default Sprite will be visible.

Rain Effect



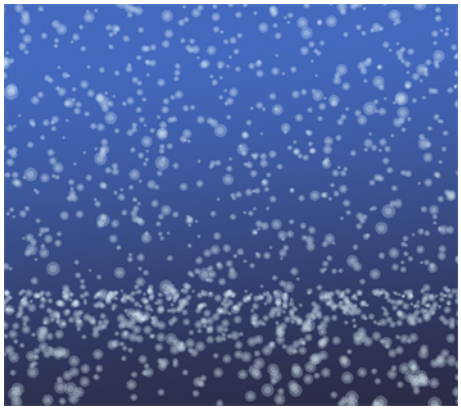
The Rain effect produces a simulation of water droplets falling from the sky in nine various presets:

- **Rain**: The default setting.
- **Tropical Storm**: The rain drops are bigger and greater in number, producing a more intense effect.
- **Mist**: The rain drops are smaller and fewer for 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.

Notes

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



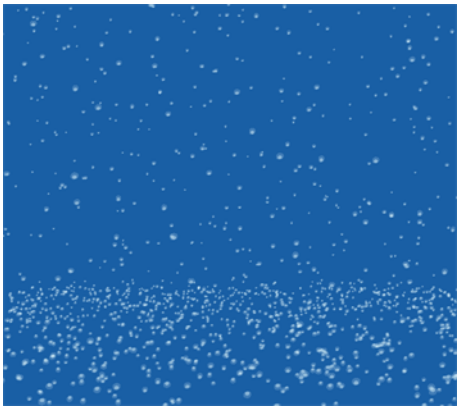
The Snow effect produces a simulation of snowflakes falling from the sky in ten various presets:

- **Snow**: This is the default setting.
- **Snow Flurries**: Fewer snowflakes produced than with snow for 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.

Notes

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 for a less intense effect.
- **Hail Storm**: The ice pellets are bigger, falling faster and in greater in number, 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.

Notes

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 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 for a less intense effect.
- **Thick Fog**: There are a greater number of particles in a larger region, 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**: Growing green fireflies evoke a balmy summer evening.
- **Bushes**: A row of lush bushes rises, gently expanding and rustling, from the bottom of the screen.

Notes

The Region dimensions, including the Floor Height, play a role in the intensity of this effect. The smaller the region, the less intense the effect, as you can 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 explore the parameters for this effect, as they are a little less obvious than the other effects.

Cloud Effect

The Cloud effect produces a simulation of a condensed gaseous vapour floating through the sky in nine various presets:

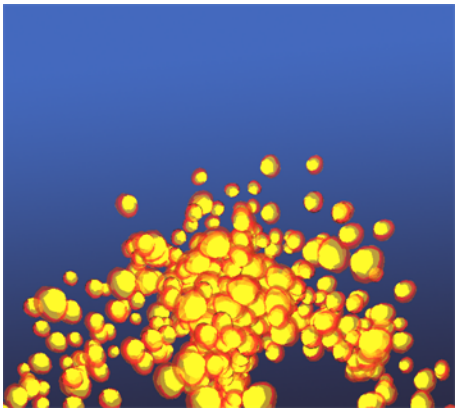
- **Cloud**: This is the default setting.
- **Fluffy Clouds**: There are fewer particles produced, with lower visibility at a slower speed, thereby creating a less intense effect.
- **Storm Clouds**: There are a greater number of particles produced, with higher visibility, thereby creating a more intense 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.

Notes

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 for a less intense effect.
- **Volcano Eruption**: There are a greater number of particles produced, with higher intensity, 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.

Notes

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 determines 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.

Blockbuster Effects

The Toon Boom Studio Blockbuster effects allow you to add some glamour and bang to your animation!

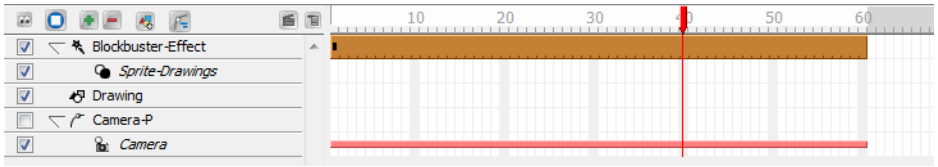
This section is divided as follows:

- Shatter Effects on the next page
- Magic Effects
- Explosion Effects on page 503
- Splash Effects on page 503
- Fire Effects on page 504
- Celestial Effects on page 505

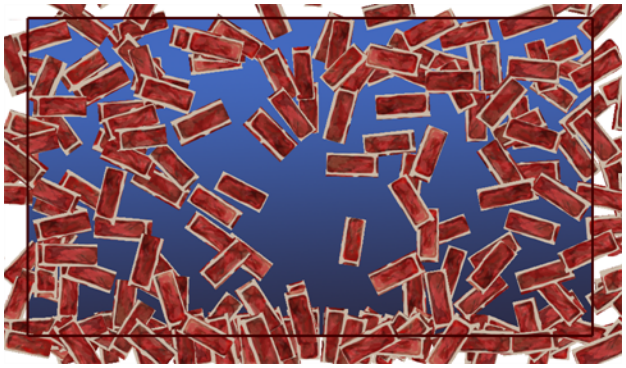
To add a Blockbuster effect:

1. Do one of the following:
   - In the Special Effect toolbar, click the Blockbuster Effect button.
   - Select **Element > Add > Blockbuster Effects**.
   - In Timeline View toolbar, click the **Add New Elements** button and select **Blockbuster Effect** from the Type list.

   A Blockbuster effect layer, as well as its child, a Sprite-Drawings layer, is added to the Timeline view. A sprite is the particle multiplied and generated by the Blockbuster effect. In the example below, a drawing of a brick is used as the sprite.



   By default, the brick wall shatter effect is selected and visible in the Camera view.



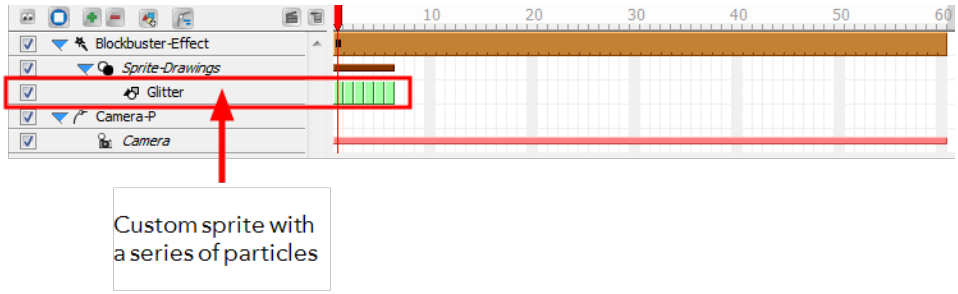
2. You have the possibility to create your own effect and customize it as you want. Create your own particle on a drawing layer, or import an image to use as a sprite (particle to multiply in the effect). Then you can attach that drawing to the existing Blockbuster effect and it will override the default content.

   In the case of the Blockbuster Shatter effects, the first image will be used as the image to break to pieces and the second drawing will be used as the pieces and area to break in the first drawing—see Shatter Effects on the next page.

For the Magic and other Blockbuster effects, 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. Therefore, if you draw a glitter particle in the first cell, a different colour glitter particle in the second cell and a different one of another colour in the third frame, you will obtain a multicolour glitter effect.

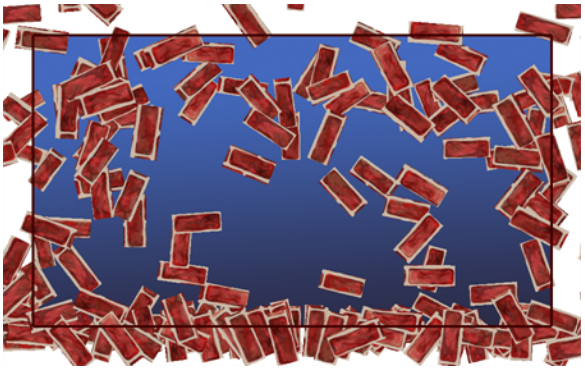
You can use this behaviour to your advantage; for example, in the event that you want to create five types of stars to be multiplied and generated. Simply create five different drawings on the same layer, but drawing each on their own frame.

3. Drag your newly created Sprite layer onto the Sprite-Drawings layer to parent it. The Blockbuster effect Sprite (unseen in the Timeline view) is automatically overridden by your custom Sprite.



If no sprite is created for a Blockbuster effect, the default sprite will be visible.

Shatter Effects



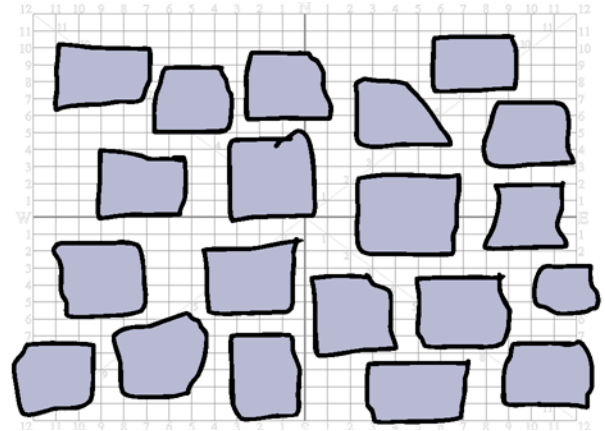
The Shatter effect produces a simulation of a solid pane breaking to pieces in nine various presets:

- **Wall Destruction**: This is the default setting.
- **Wall Breach**: Only a portion of the wall breaks apart.
- **Wall Breakthrough**: A character shape breaks away from the wall giving the illusion a character ran through.
- **Bottle Explosion**: A bottle explodes completely breaks apart .
- **Bottle Break**: A bottle breaks apart.
- **Bottle Fragment**: A bottle cracks and breaks.
- **Shattered Glass**: A glass pane is shattered to pieces.
- **Broken Glass**: A portion of a glass pane is broken to pieces.

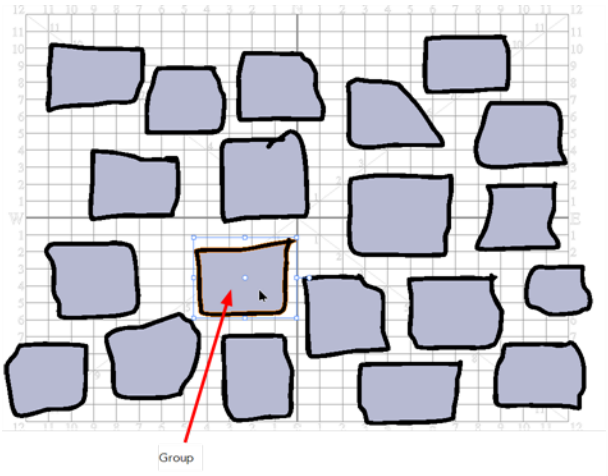
- **Peak-a-glass**: A character shape breaks away from the glass pane giving the illusion a character ran through

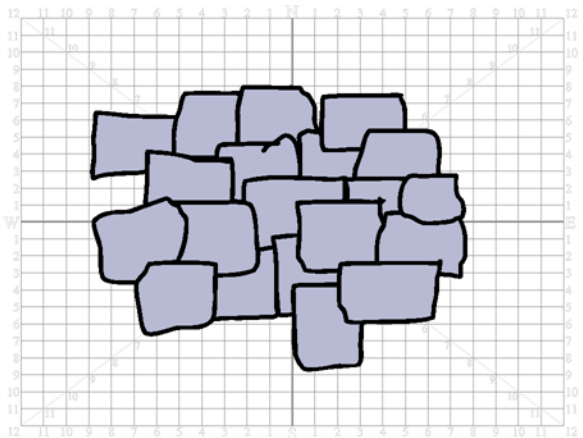
To create your own shatter sprite, draw your pane in the first cell of a drawing layer.

In the second cell, draw the pieces in which you want the pane to break apart. The areas where there will not be any drawing will remain untouched. If you want your pane to break in pieces without leaving a gap between the pieces, draw your pieces separately.

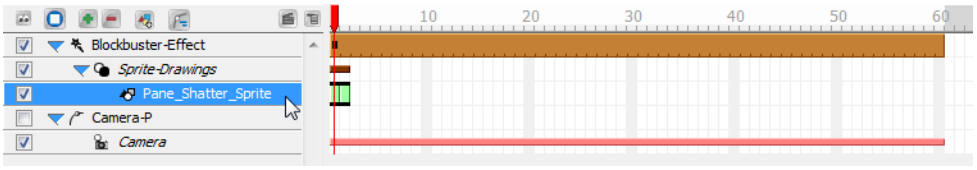


With the Select tool, move them together so that they overlap. If you want to make sure that the outline remains with the painted zone and that your pieces do not get mixed up, you should group them (outline and colour fill) together before overlapping your pieces.

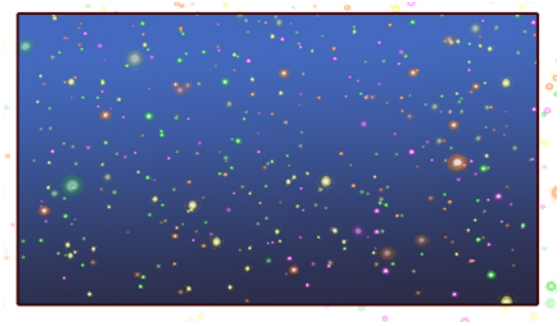




Once your sprite is ready, you can drag your sprite drawing layer onto the Sprite-Drawings layer of your Shatter Blockbuster effect.



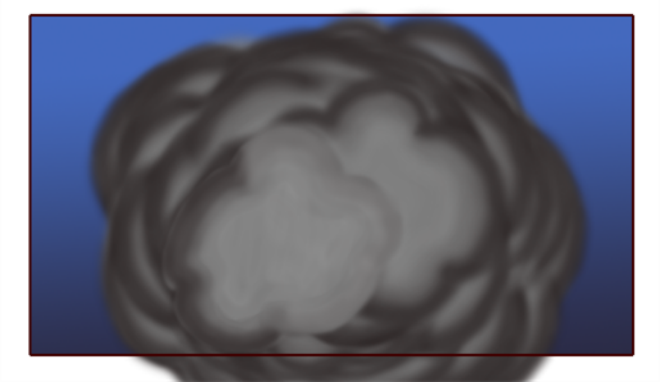
Magic Effects



The Magic effect produces a simulation of shiny sparkles and particles in nine various presets:

- **Glitter Shower**: This is the default setting.
- **Glitter Mist**: A light glitter rain falls down.
- **Glitter Fall**: A string of glitter falls down as from a fairy or magic wand.
- **Ocean Bubbles**: A large amount of bubbles float up.
- **Sea Bubbles**: A series of bubbles float up.
- **Aquarium Bubbles**: A few little bubbles float up.
- **Omni Star Storm**: A series of multicolour stars rush toward the screen.
- **Omni Star Mist**: A few multicolour stars float toward the screen.
- **Omni Star Spin**: Stars spin in the scene to similate dizziness.

Explosion Effects



The Explosion effect produces a simulation of smoke and fire explosions in nine various presets:

- **Blast**: This is the default setting.
- **Blowup**: A big smoke cloud explosion.
- **Bang**: A small cloud explosion.
- **Long Electrical Circuit**: A long lightning bolt between two electrodes.
- **Medium Electrical Circuit**: A medium lightning bolt between two electrodes.
- **Short Electrical Circuit**: A short lightning bolt between two electrodes.
- **Dazzling Fireworks**: A series of multicolour fireworks.
- **Brilliant Fireworks**: A few multicolour fireworks.
- **Glittery Fireworks**: One multicolour firework.

Splash Effects

The Splash effect produces a splash of water, goop or mud in nine various presets:

- **Water Splash**: This is the default setting.
- **Water Spray**: A medium water splash.
- **Water Squirt**: A small water splash.
- **Goop Splatter**: A big goopy splash.

- **Goop Blob**: A medium goopy splash.
- **Goop Dab**: A small goopy splash.
- **Mud Splatter**: A big muddy splash.
- **Mud Blob**: A medium muddy splash.
- **Mud Dab**: A small muddy splash.

The Splash effect custom sprite does not work like other Blockbuster effects. The sprite must be a traditional splash animation.

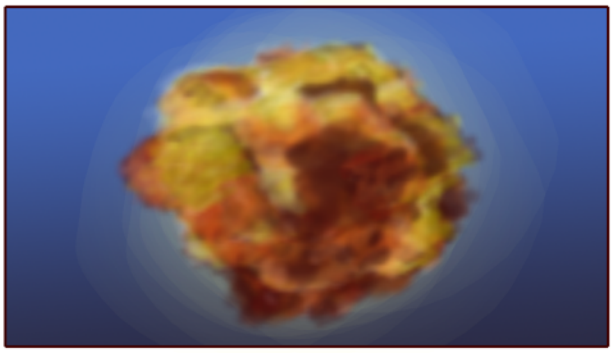
Fire Effects

The Fire effect produces a simulation of fire and smoke in nine various presets:

- Inferno: This is the default setting.
- Fire: A medium size fire.
- Flame: A small size fire.
- Smoke Screen: A big smoke chimney.
- Smoke Fog: A medium smoke chimney.
- Smoke Cloud: A small smoke chimney.
- Blaze: A huge spark.
- Ignite: A medium spark.
- Spark: A small spark.

The Fire effect custom sprite does not work like other Blockbuster effects. The sprite must be a traditional fire animation.

Celestial Effects

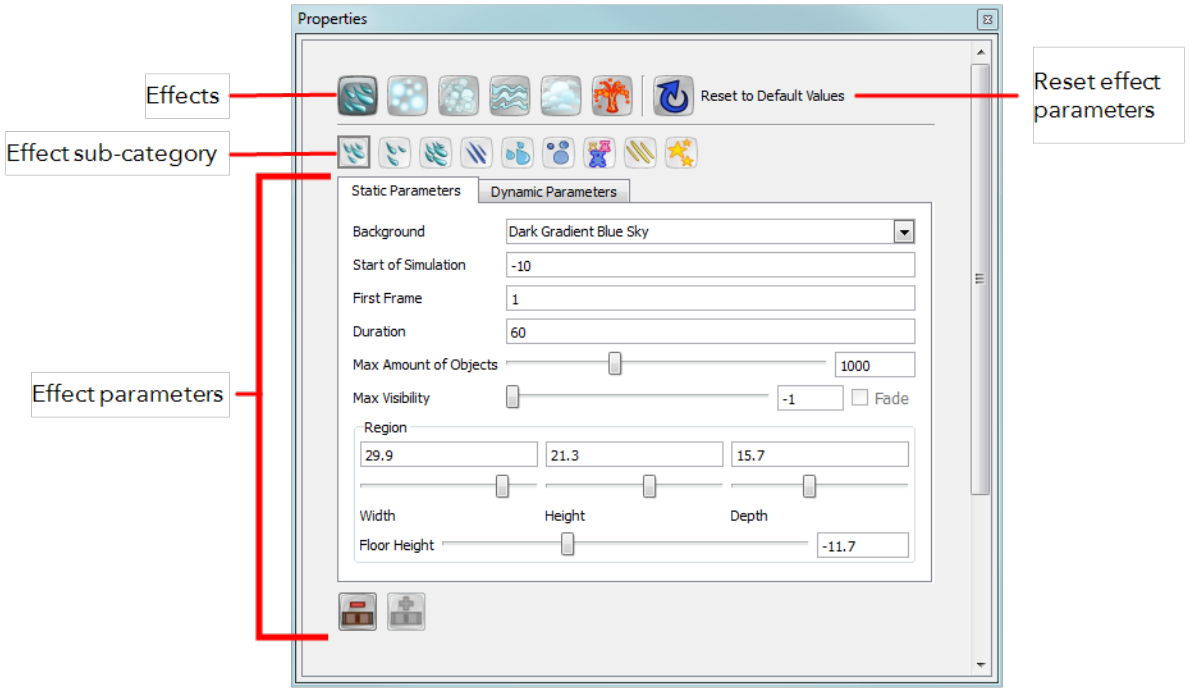


The Celestial effect produces a simulation of space explosions in nine various presets:

- **Brilliant Supernova**: This is the default setting.
- **Bright Supernova**: A big and bright supernova explosion.
- **Glimmer Supernova**: A small and faraway supernova explosion.
- **Intense White Nova**: A gigantic white nova explosion and its large smoke ring.
- **Luminous White Nova**: A big white nova explosion and its smoke ring.
- **Light White Nova**: A small white nova explosion and its smoke ring.
- **Meteor Storm**: An intense and large meteor shower.
- **Meteor Shower**: An medium meteor shower.
- **Meteor Mist**: An small meteor shower.

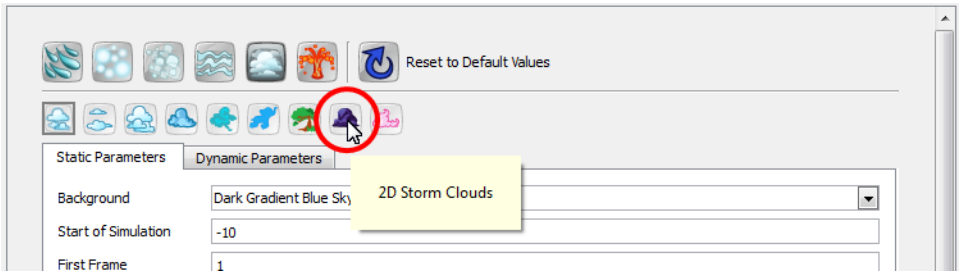
Customizing Your Effect

To customize and animate your Forces of Nature and Blockbuster effects, you must 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.



Effects

From the top row of icons, click the button corresponding to the Forces of Nature or Blockbuster effect that you want to use. It will turn dark grey to indicate that it is selected. If you are unsure as to which Forces of Nature or Blockbuster effect is depicted on a given button, hover your pointer over the button and a tooltip will appear.



The effect will change in the Camera view depending on which effect you choose. Click on the effect you want to use; the corresponding sub-menu appears with its associated parameters.

In the above example, Clouds 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.

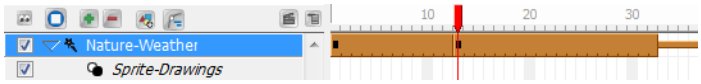
General Properties Buttons

- **Reset to Default Values**: After you have made adjustments to the parameters in the Static or

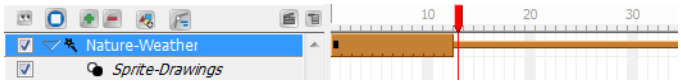
  Dynamic Parameters tab and you would like to bring back the defailt settings, click this button to reset

the default values in both tabs.

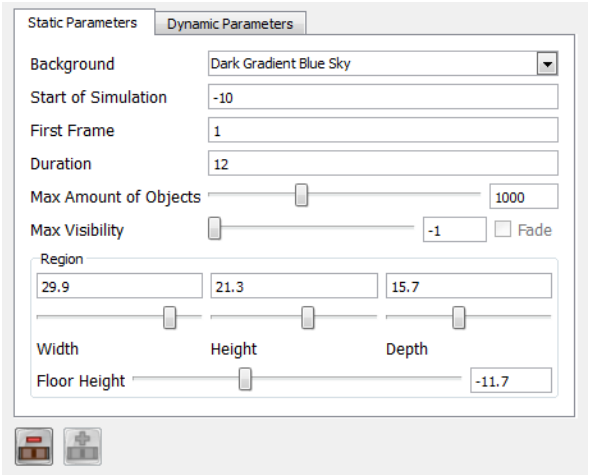
- **Add Fill**: Use this button to divide an effect on the Timeline. Once divided, a different effect can be applied to one of the two halves. This allows for two different effects to exist on the same layer in the Timeline.



- **Delete Fill**: Use this button to delete all the cells of a single effect, in a layer where multiple effects exist.



Static Parameters Tab



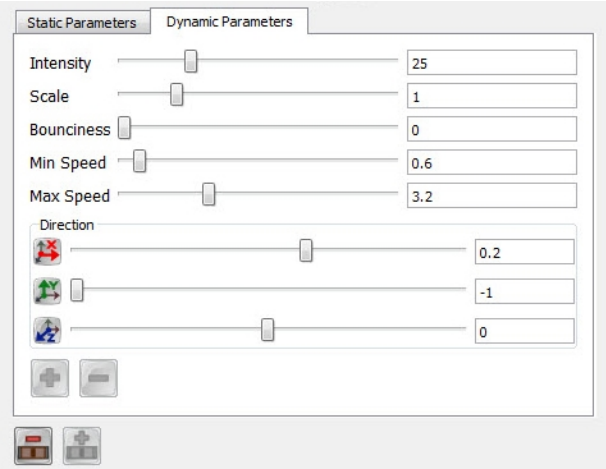
- **Background**: Choose from one of three background colour options: Dark Gradient Blue Sky, Light Gradient Blue Sky, or Transparent.
- **Start of Simulation**: The frame number where you want the generation of particles to start. If you want the effect to be in progress beginning at the start of your scene, keep the default value of -1. This number is relative to the First Frame value.
- **First Frame**: The frame number where you want 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 want 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 eventually fill the Camera view with their number. For example, if a value of 2 is entered, then only two particles are generated until they disappear from the Camera view (finish their life span). At that time, another two or less particles are generated to replace the two that disappeared from view.
- **Max Visibility**: The maximum number of frames that a particle exists 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 disappear well before 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**: Select this option if you 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 and 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 want to see snow hitting and covering the ground, 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 and Shatter effects.
- **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 Keyframe**: 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**: Delete a selected keyframe from the Forces of Nature layer in the Timeline view.

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 remain visible in the Timeline view.

To disable all effects:

1. Select **View > Disable All Effects**.

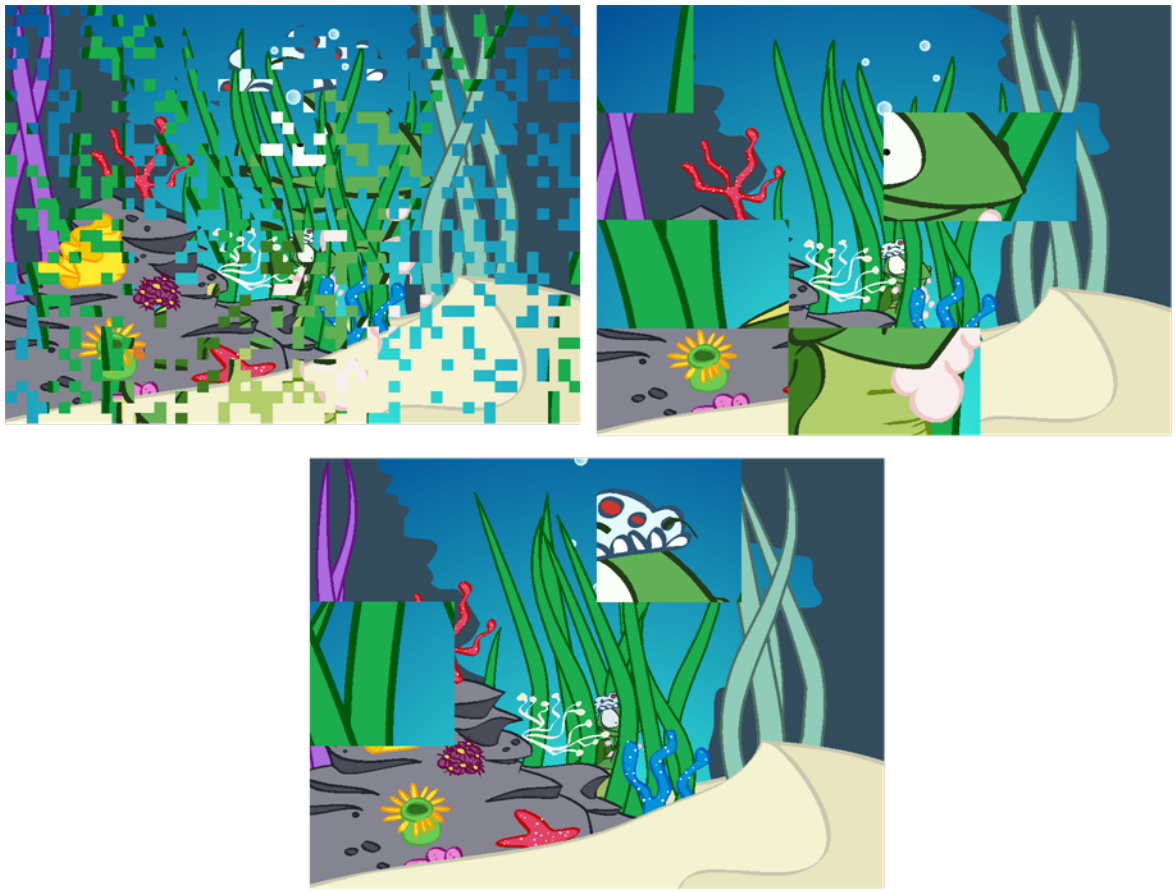
   Once you have disabled the effects in your scene, you can easily re-enable them.

To enable all effects:

1. Select **View > Enable All Effects**.

Your project will be exported with the effects visible, regardless if the Disable All Effects option is on.

Chapter 17: Scenes and Transitions



With Studio, you can work in the Storyline view to arrange your scenes, and then add transition effects to smoothly move from one scene to the next.

In this chapter, you will learn about the following:

- Working with Scenes and Transitions on the next page
- About the Storyline View on page 513
- Working with Scenes on page 514
- Applying Transitions on page 517

Working with Scenes and Transitions

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. To create scenes in a Studio project, you will use the Scene Manager where you can select scenes, create and delete scenes, as well as reorder scenes. When you are satisfied with your scenes, you can add transitions to them.

A transition is a change, like a fade, wipe, or cross dissolve, that you can apply between scenes on the Storyline view. You can apply transitions to the beginning or end of a single scene, or between two scenes.

In this chapter, you will learn the following:

- About the Storyline View on the facing page
- Working with Scenes on page 514
- Applying Transitions on page 517

About the Storyline View

The Storyline view is where you can manage your scenes, view scenes in a sequence, and add transitions between scenes.

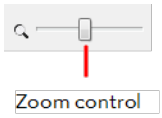
To access the Storyline view:

1. Do one of the following:
   - At the bottom of the Studio screen, click on the Storyline view tab.
   - Select **Window > Storyline.**
   - Press [Ctrl] + [Shift] + [M] (Windows) or [⌘] + [Shift] + [M] (Mac OS X)

   The Storyline view is displayed.

To zoom the Storyline view:

1. In the upper-left corner of the scene area, drag the zoom control right zoom in on the scene area. Drag right to zoom out.



Playing a Sequence

A group of scenes occurring in the same location about the same action or event is called a *sequence*. Once you have constructed your scenes into a sequences and inserted transitions, you can preview your sequence to see the result.

To play a sequence:

- In the Storyline view, click the Play Storyline button.

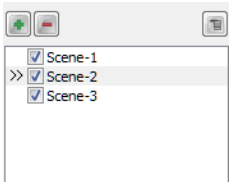
Working with Scenes

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. To create scenes in a Studio project, you will use the Scene Manager section of the Storyline view.

To create scene:

1. In the Storyline view, go to the Scene Manager section and do one of the following:
   - In the top area, click the New Scene button.
   - Click the Menu button and select **New Scene**.
   - In the Scene list, right-click on a scene and select **New Scene**.

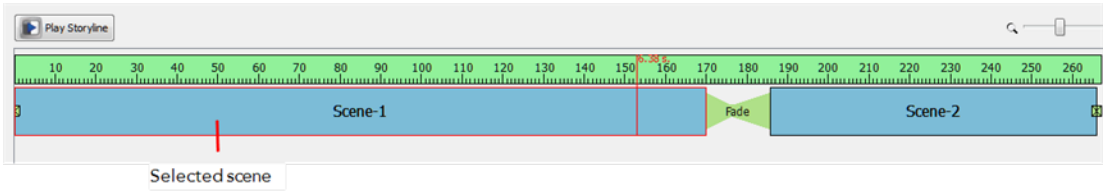
   The new scene appears in the scene list.



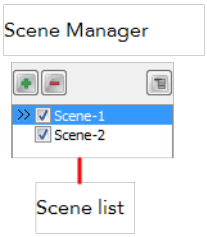
2. To open a scene from the list, double-click on the scene's name.

To select a scene:

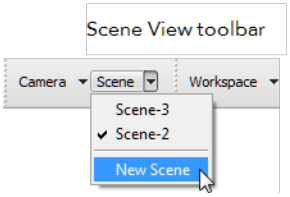
1. Do one of the following:
   - From the Storyline view, select a scene.



   - In the Scene Manager, select a scene from the list.



   - From the Scene View toolbar (Top toolbar on Mac OS X), select a scene from the drop-down menu.

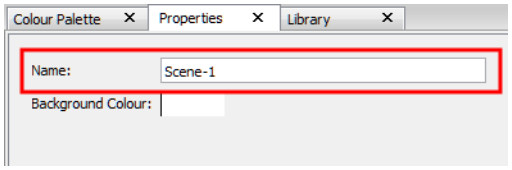


The scene`s properties are displayed in the Properties panel.

To change the background colour of a scene:

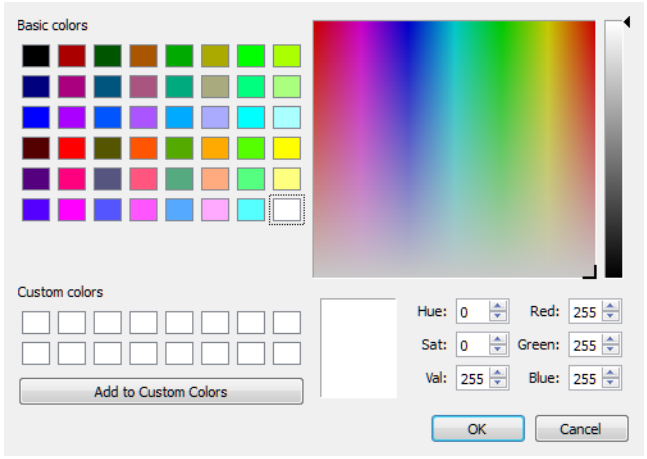
1. Select a scene.

   The scene`s properties are displayed in the Properties panel.



2. Click the Colour Picker swatch.

   The Colour Picker opens.



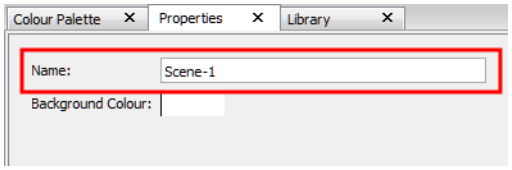
3. Select a colour and click OK.

To rename a scene:

1. Select a scene.

   The scene`s properties are displayed in the Properties panel.

2. Type in a new name in the **Name** field.



To delete a scene:

1. Select a scene from the Scene Manager.
2. Do one of the following:
   - Click the Delete Scene button.
   - Click the Menu button and select **Delete Scene**.

- Right-click a scene and select **Delete Scene**.

The selected scene is removed from your list.

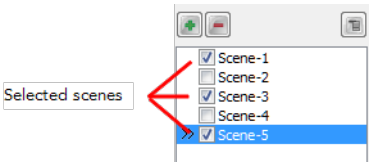
To reorder a scene:

1. In the Scene Manager, select a scene and drag it to a new location.

The reordered sequence is displayed in the scene area of the Storyline view.

To showing or hide a scene:

1. In the Scene Manager, select the scenes you want to appear in the Storyline view. Deselect the scenes you want to hide.



The selected scenes are displayed in the scene area of the Storyline view. The deselected scenes are hidden.

Applying Transitions

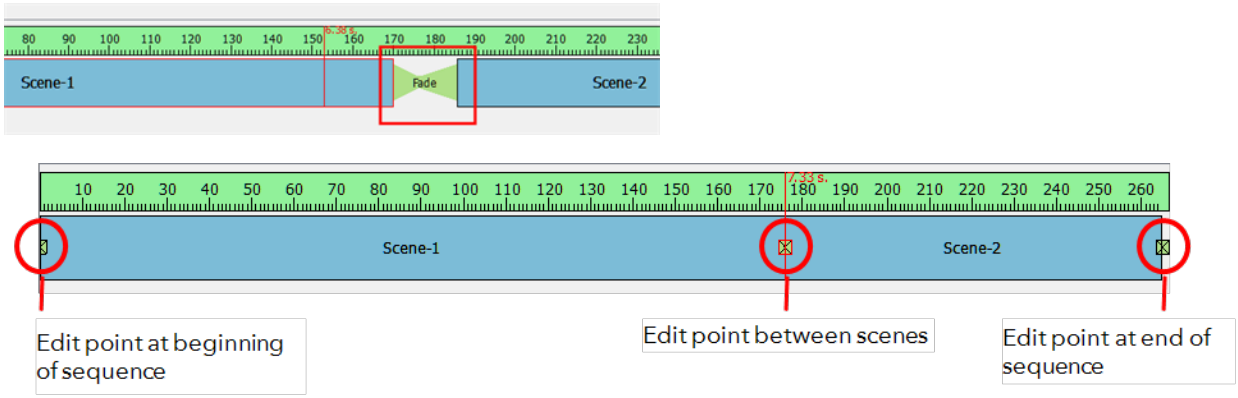
A transition is a change, like a fade, wipe, or cross dissolve, that you can apply between scenes on the Storyline view. You can apply transitions to the beginning or end of a single scene, or between two scenes.

For example, you can use a one-sided transition to fade into a scene at the beginning of your sequence. You can then apply wipes, slides, and cross dissolves between other clips in the Storyline view to move smoothly from one scene to the next.

The default transition between scenes is fade in and out.

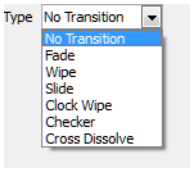
To apply a transition:

1. In the Storyline view, select the transition to modify between the scenes. If you removed the existing transition, select the edit point at the beginning or end of the scene, or between two scenes.

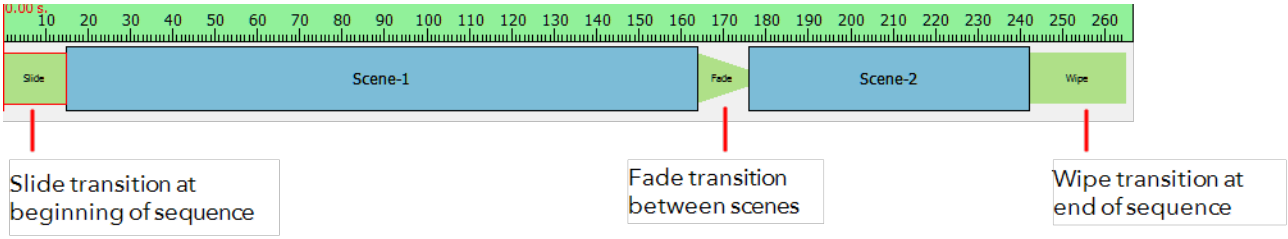


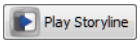
   The edit point is highlighted and red playhead snaps to the location you clicked.

2. In the Properties panel, select a transition from the Type list. By default, Fade is the default setting.



3. In the Properties panel, edit the transition properties.
4. Enter the Duration (in frames) for the transition. If you select the Fade transition, you must enter the **Left Duration**, **Blank Duration**, and **Duration Right**.
5. The transition appears in the Storyline view.

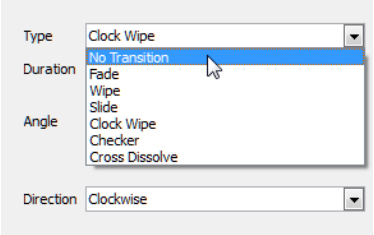


6. In the Storyline view, click the Play Storyline  button.

To remove a transition:

1. Select a transition.

   The transition's properties are displayed in the Properties panel.
2. From the Type list, select **No Transition**.



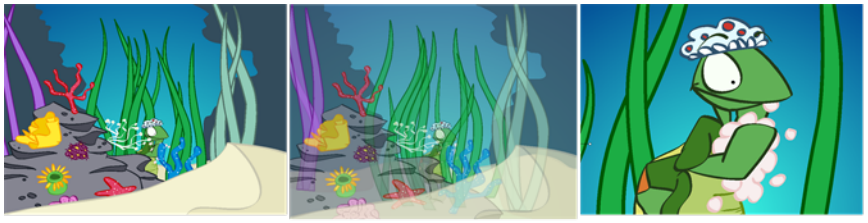
Transitions

There are six different transitions to choose from in Studio. Once you apply a transition, you can edit its properties to get just the right look for your project.

- Fade below
- Wipe on the facing page
- Slide on the facing page
- Clock Wipe on page 520
- Checker on page 520
- Cross Dissolve on page 520

Fade

The Fade transition lets you adjust the video levels to fade in or fade out a clip. You can also specify the colour from which the scene fades in or to which it fades out.



Scene 1 | Fade transition: Scene 1 fades out gradually as Scene 2 fades in. | Scene 2

Left Duration: The number of frames at the beginning of the transition.

Colour: Opens the colour picker so you can select the colour of the transition.

Blank Duration: The number of blank frames at the end of the transition.

Wipe

The Wipe effect transition lets you create a transition between two scenes, such that the second clip is revealed according to a specified pattern.

Wipe transition set to various angles

Wipe set at 0°, Direction = In. The wipe starts at the top of the frame and moves downwards.

Wipe set at 90°, Direction = In. The wipe starts at the right of the frame and moves to the left.

Wipe set at 180°, Direction = In. The wipe starts at the bottom of the frame and moves upwards.

Duration: The number of frames the transition lasts.

Colour: Opens the colour picker so you can select the colour of the transition.

Angle: Let you set the angle at which the transition starts, from 0° to 359°.

Direction: The direction the transition is moving towards: In or Out. In the In direction, the transition moves towards the left. In the Out direction, the transition moves towards the right.

Slide

The Slide transition lets you show the outgoing scene moving upwards to reveal the incoming scene.

Angle = 45° | Angle = 130° | Angle = 234°

Duration: The number of frames the transition lasts.

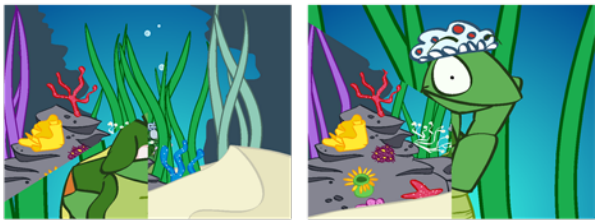
Colour: Opens the colour picker so you can select the colour of the transition.

Angle: Let you set the angle at which the transition starts, from 0° to 359°.

Clock Wipe

The Clock Wipe transition lets you create a wipe transition that moves clockwise or counterclockwise.

Clock Wipe starts at 180°



Clock Wipe moves in clockwise direction.

Clock Wipe moves in counterclockwise direction.

Duration: The number of frames the transition lasts.

Colour: Opens the colour picker so you can select the colour of the transition.

Angle: Let you set the angle at which the transition starts, from 0° to 359°.

Direction: The direction the transition is moving: Clockwise or Counterclockwise.

Checker

The Checker transition lets you create a transition that resembles a checkerboard. You can change the size and colour of the checkerboard tiles.

Checker transition with various size tiles

Small tiles

Medium size tiles

Large tiles

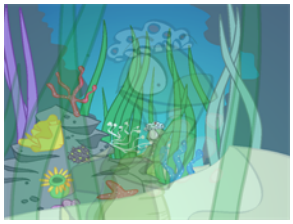
Duration: The number of frames the transition lasts.

Colour: Opens the colour picker so you can select the colour of the transition.

Size: Lets you adjust the size of the checkboard tiles. Drag left for smaller tiles and drag right for larger ones.

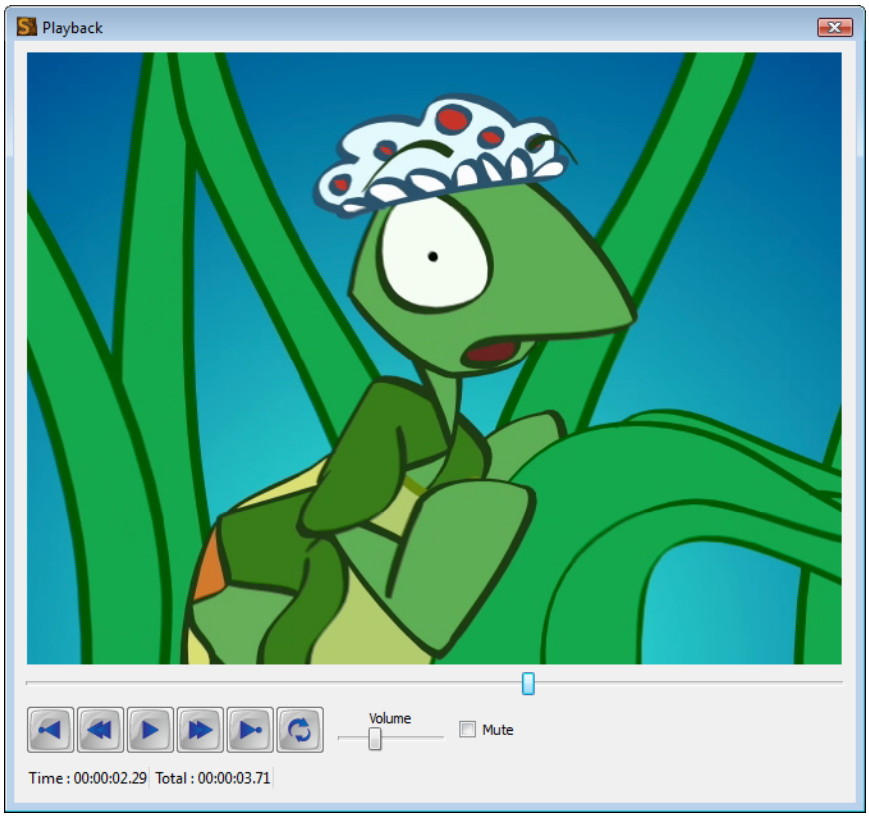
Cross Dissolve

The Cross Dissolve transition lets you between scenes in which the image from one scene gradually becomes less distinct as the image from the other scene replaces it.



Duration: The number of frames the transition lasts.

Chapter 18: Exporting Your Project



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 the next page
- Export Movie on page 525
- Export to YouTube and Facebook on page 528
- Export Snapshot on page 527
- Print on page 533

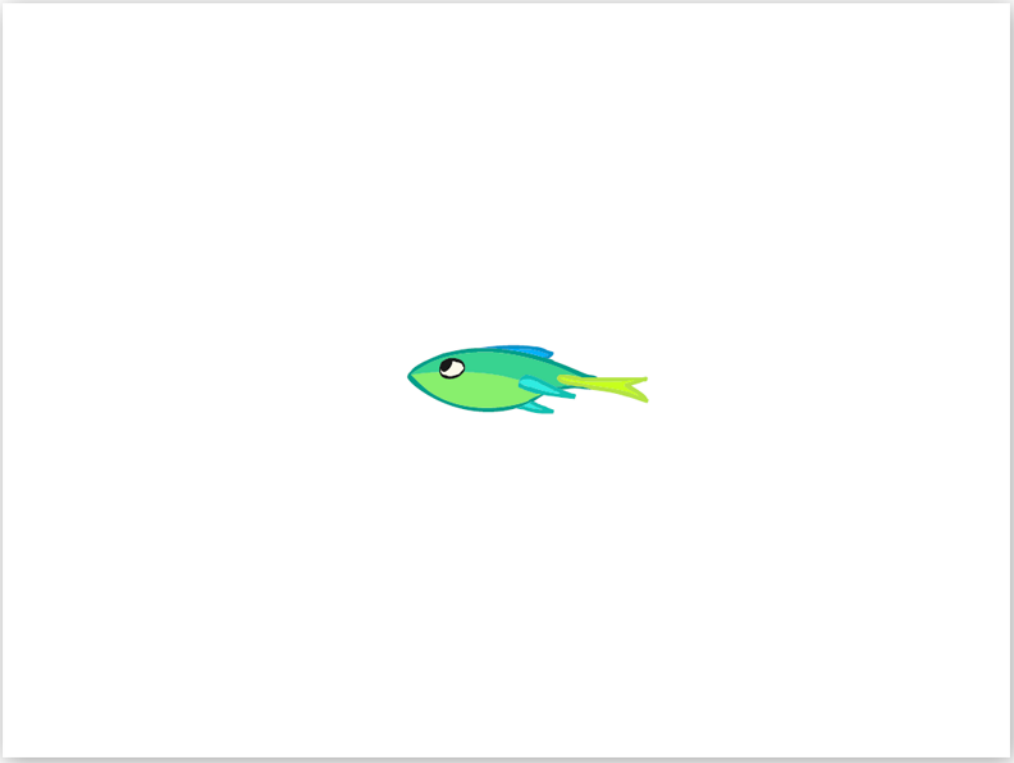
Export Drawing to PDF

Exporting a frame of your animation to PDF is useful 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 want to render. It must be from a drawing (vector based) layer and not an image (bitmap) layer.
2. Select **File > Export Drawing to PDF**.

   The Save As dialog box appears.
3. Browse to the location where you want to save your file.
4. In the File name field, enter a name for your file.
5. Click **Save**.
6. Browse to the location where you saved your file and double-click on it to view the results. It is also possible to open this file in a vector-based, third-party software, such as Adobe Illustrator.



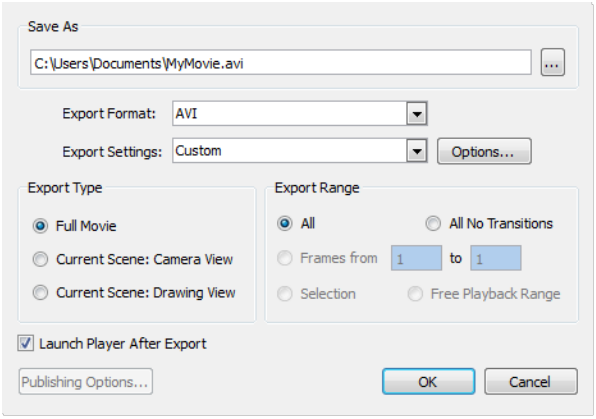
Export Movie

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?

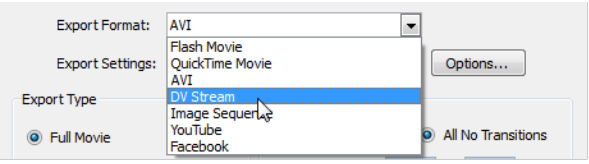
To export your movie:

1. Select **File > Export to Movie**.

   The Export dialog box appears.

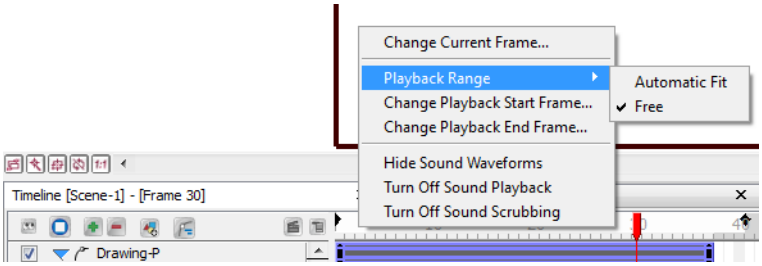


2. In the Save As section, click on the Browse button at the end of the path field and browse for the location where you intend to save your rendering.
3. In the **Export Format** list, select a format. The Export Settings Options changes depending on the format selected from this section.



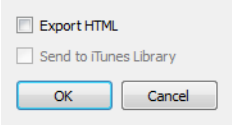
4. Click **Options** to customize the format settings.
5. In the Export Type section, choose from the following options:
   - **Full Movie**: Renders all scenes and all layers that are enabled, from the first to last frame, including all effects.
   - **Current Scene**: **Camera View**: Renders all layers 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 your entire project.
   - **All No Transitions:** Renders the entire project without transitions.
   - **Frame Range:** Allows you to select a specific section of your project to render by frame number.
   - **Selection**: Renders whichever layer or element that you selected before starting the export process.

1. **Free Playback Range**: In the Timeline view, right-click on the timeline ruler (top) and select **Playback Range > Free**. Two black diamonds appear at the start and finish of your project. Drag these markers to select a range. Note: This must be done before you open the Export Dialog window.



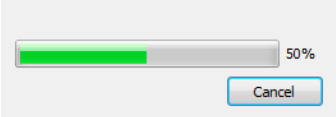
2. Select or deselect the **Launch Player After Export** option.
3. Click **Publishing Options**.

   The Publishing dialog box appears.



4. 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.
5. When you are finished, click OK.
6. In the Export dialog box, when you are through, click OK.

   A progress bar appears.



7. Browse to the location on your computer where you saved your movie and double-click on the file to view your export.

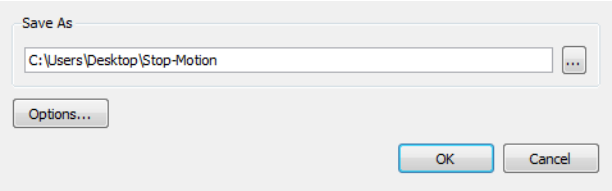
Export Snapshot

Sometimes you may want 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:

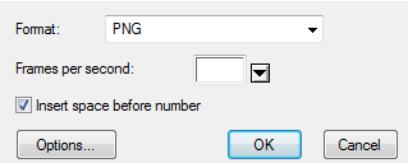
1. In the Timeline or Exposure view, select the location in your animation where you are able to frame the image that you want render perfectly in the Camera view.
2. Select **File > Export Snapshot**.

   The Snapshot dialog box opens.



3. From the Snapshot dialog box, browse to the location on your computer where you want to save your work and rename your image accordingly.
4. Click **Save**.
5. In the Snapshot dialog box, click **Options**.

   The Export Image Sequence Settings dialog box opens.



   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 as you are only rendering one image.
6. From the Format list, 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.

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 automatically redirects you to your YouTube or Facebook profile where your video will automatically be uploaded.

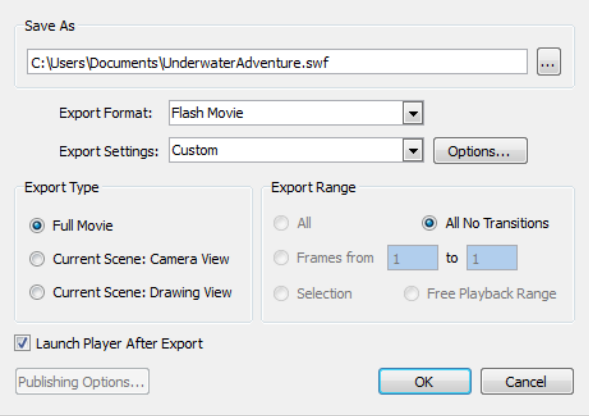
You require an active account on YouTube or Facebook before you can upload your videos.

Exporting to YouTube

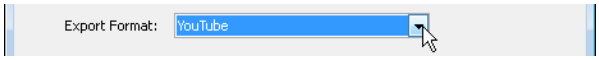
To export your movie to YouTube, you must already have a YouTube account. If you do not have an account, create one at www.youtube.com.

To export your movie to your YouTube account:

1. Select **File > Export to Movie**.
   The Export dialog box opens.



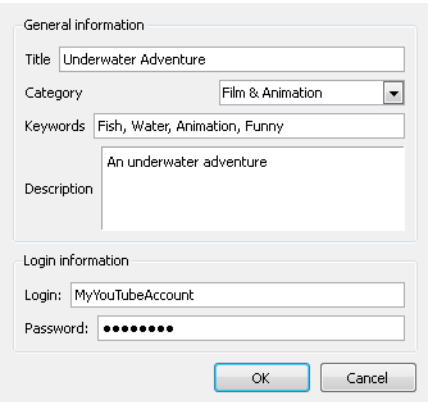
2. In the Save As section, click the Browse button at the end of the path field and browse for the location where your render will be saved.
3. From the **Export Format** list, select **YouTube**.



4. In the Export Type section, choose from the following options:
   - **Full Movie:** Renders all scenes and all layers that are enabled, from the first to last frame, including all effects.
   - **Current Scene**: **Camera View:** Renders 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 the entire project.
   - **All No Transitions**: Renders the entire project without transitions.
   - **Frame Range:** Allows you to select a specific section of your project to render by frame number.
   - **Selector**: Renders 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 select **Playback Range > Free**.

   Two black diamonds appear at the start and finish of your project. Drag these markers to select a range.
6. 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 information that appears on your YouTube account.

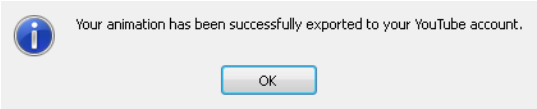
   - **Title**: Type in the name of your video
   - **Category**: Use the drop-down menu to select the category that best fits your video.
   - **Description**: Type in a description of your video.

   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 OK.

   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 OK.

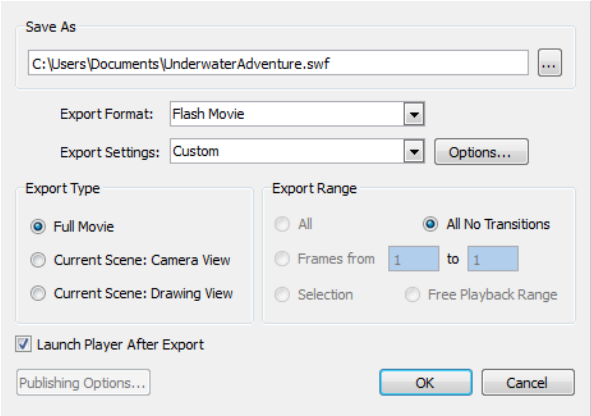
Exporting to Facebook

To export your movie to Facebook, you must already have a Facebook profile. If you do not have a profile, create one at www.facebook.com. Once it is done, upload your creations to your profile to share with your friends on Facebook.

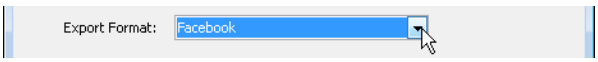
To export your movie to your Facebook profile:

1. Select **File > Export to Movie**.

   The Export dialog box opens.



2. In the Save As section, click 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**.

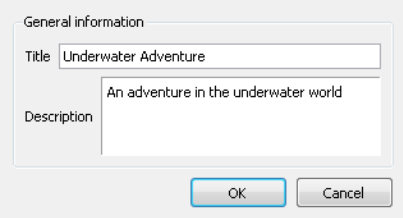


4. In the Export Type section, choose from the following options:

- **Full Movie:** Renders all scenes and all layers that are enabled, from the first to last frame, including all effects.
- **Current Scene**: **Camera View** - Renders 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.

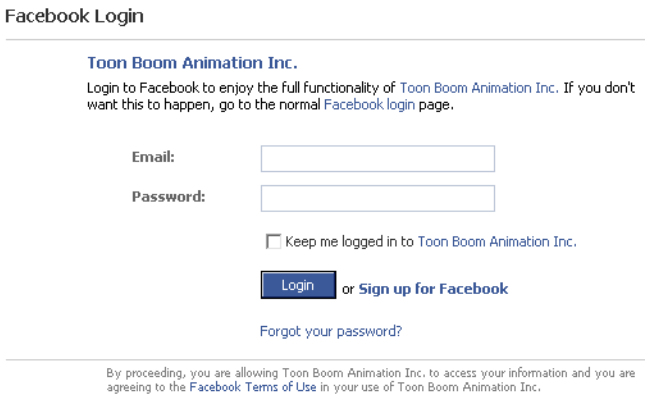
5. From the Export Range Section, choose from the following options:
   - **All** - Renders the entire project.
   - **Frame Range** - Allows you to select a specific section of your project to render by frame number.
   - **Selector** - Renders out whichever layer or element that you selected prior 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 appear at the start and finish of your project. Drag these markers to select the range that you desire.
6. 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 appears on your Facebook account.
   - **Title**: Type in the name of your video
   - **Description**: Type in a description of your video.
8. Click OK.

   The Facebook wizard dialog box opens and your internet browser is launched and automatically directed on the Facebook login page.

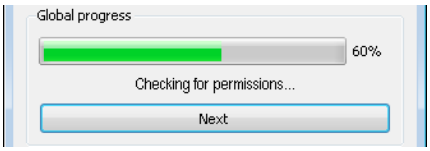


9. In your internet browser, log into your Facebook account.

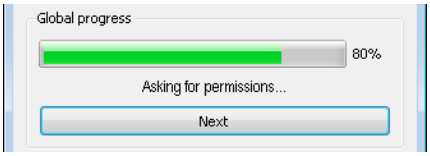
Although you are not on the Facebook website you are now logged into Facebook. To log out you need to go onto your account on the Facebook website.

10. In the Facebook wizard, click **Next**.

    The Facebook wizard checks for permissions.



11. The first time you go through these steps, when the Facebook wizard asks for permissions, the internet browser is automatically directed to the Facebook confirmation page, where you need to give your authorization.
    The next time you export a video to your Facebook account, the wizard automatically uploads the video to your account.

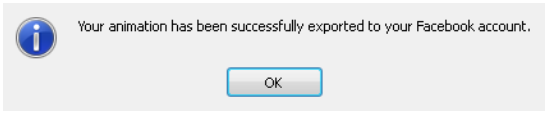


- In the Internet browser, click **Allow Video Uploads**.
  The Facebook page notifies you that the permissions have been saved.

You may now close this window.

- In the Facebook wizard dialog box, click **Next**.

  The wizard finishes the upload and a dialog box opens notifying you that your video has been successfully uploaded



12. Click OK.

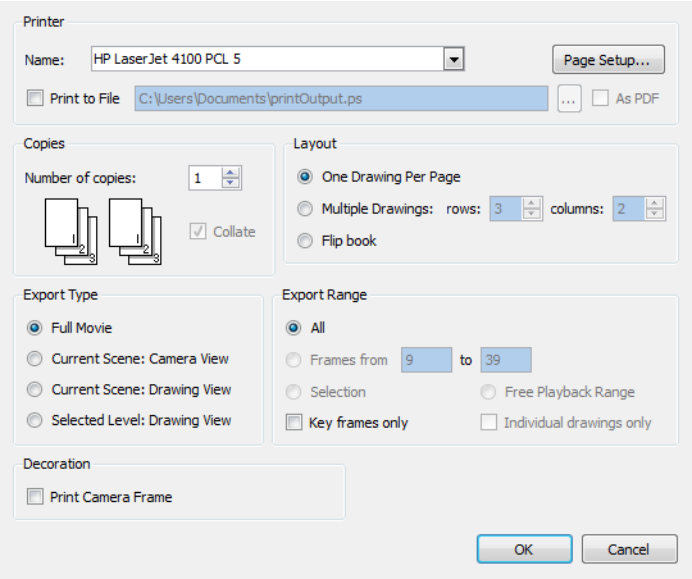
Print

Although you may want to print out part or all or your finished or unfinished animation for reasons 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:

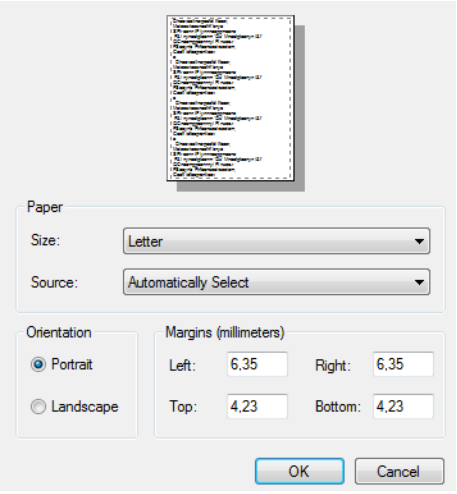
1. Select **File > Print**.

   The Printing dialog box opens.



2. From the Printer section, look through the Name list to select a printer, which is connected to your computer.
3. Click **Page Setup**.

   The Page Setup dialog box opens.

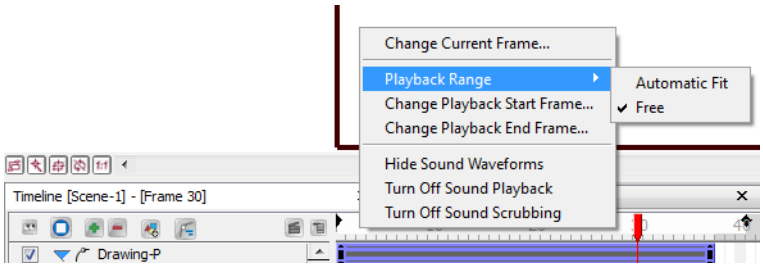


4. Customize your page setup and click OK.
5. In the Printer section, if you want to print your file digitally and have it saved somewhere on your computer, select the Print to File option and browse to the location where you would like to save this file on your computer. Select the As PDF if you so 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 prints 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 automatically places either 6 to 8 frames per page and leaves a margin for binding purposes.
Once the images are printed, you have to cut your images to create your flip book. If you put only one image per page, it is difficult to quickly flip through the drawings as the pages are 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 the entire project.
   - **Frame Range:** Allows you to select a specific section of your project to render by frame number.
   - **Selector**: Renders whichever layer or element you selected before starting the printing process.
   - **Free Playback Range:** In the Timeline view, right-click on the timeline ruler (top) and select **Playback Range > Free**.

   Two black diamonds appear at the start and finish of your project. Drag these markers to select the range that you desire. Note: This must be done before you open the Export Dialog window.

10. In the same section, decide on one, both or none of the following options:
    - **Keyframes only**: Prints drawings on a frame with a keyframe in the Timeline view.
    - **Individual drawings only**: Prints 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 are not printed. In other words, you receive only one printout of this drawing instead of ten.
11. From the Decoration section, decide whether or not you want to select the **Print Camera Frame** option.
12. Click OK.

    You now have a frame-by-frame printed copy of your animation that is ready to be cut and bound into a flip book.

Chapter 19: Keyboard Shortcuts for Toon Boom Studio

This document lists the default keyboard shortcuts for Toon Boom Studio. To use a shortcut, press the key(s) and the character simultaneously. The plus sign (+) is not part of the sequence.

Commands without shortcuts are left blank in these tables.

The **Custom** column is provided so you may write down the shortcuts 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 > Preferences > Shortcut**s (Mac OS X).

COMMAND			
COMMAND	**WINDOWS**	**MAC OS X**	**CUSTOM**
Centre on Mouse	[N]	[N]	
Next Drawing	[Shift] + [S]	[Shift] + [S]	
Next Element	[F]	[F]	
Next Element in Exposure Sheet	[Shift] + [F]	[Shift] + [F]	
Next Frame	[S]	[S]	
Previous Drawing	[Shift] + [A]	[Shift] + [A]	
Previous Element	[D]	[D]	
Previous Element in Exposure 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]	[⌘] + [C]	
Cut	[Ctrl] + [X]	[⌘] + [X]	
Cut Special	[Ctrl] + [Shift] +[X]	[⌘] + [Shift] +[X]	
Delete	[Del]	[Del]	
Deselect All	[Ctrl] + [Shift] + [A]	[⌘] + [Shift] + [A]	
Paste	[Ctrl] + [V]	[⌘] + [V]	
Paste New Object	[Ctrl] + [Shift] + [V]	[⌘] + [O]	
Paste Special	[Ctrl] + [B]	[⌘] + [B]	
Paste Special Again	[Ctrl] + [Shift] + [B]	[⌘] + [Shift] + [B]	
Redo	[Ctrl] + [Shift] + [Z]	[⌘] + [Shift] + [Z]	
Select All	[Ctrl] + [A]	[⌘] + [A]	
Undo	[Ctrl] + [Z]	[⌘] + [Z]	

FILE MENU

COMMAND	WINDOWS	MAC OS X	CUSTOM
Close	[Ctrl] + [W]	[⌘] + [W]	
Exit	[Ctrl] + [Q]	[⌘] + [Q]	
New	[Ctrl] + [N]	[⌘] + [N]	
Open	[Ctrl] + [O]	[⌘] + [O]	
Print	[Ctrl] + [P]	[⌘] + [P]	
Save	[Ctrl] + [S]	[⌘] + [S]	
Save As	[Ctrl] + [Shift] + [S]	[⌘] + [Shift] + [S]	

HELP MENU

COMMAND	WINDOWS	MAC OS X	CUSTOM
Toon Boom Studio Help	[F1]	[⌘] + [Shift] + [?]	
What's This? Help	[Shift] + [F1]	[Alt] + [Shift] + [?]	

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]	[⌘] + [Alt] + [Enter]	
Preview Exposure Sheet Selection	[Shift] + [Enter]	[Shift] + [Enter]	
Preview Movie	[Ctrl] + [Shift] + [Enter]	[⌘] + [Shift] + [Enter]	
Preview Scene	[Ctrl] + [Enter]	[⌘] + [Enter]	
Quick Preview	[Return]	[Return]	

TOOLS MENU

COMMAND	WINDOWS	MAC OS X	CUSTOM
Bone Creator Tool	[U]	[U]	
Bone Manipulator	[H]	[H]	
Bone Setup Tool	[J]	[J]	
Brush	[@]	[@]	
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]	
Dropper (when Brush, Paint or Pencil tool is selected)	[Alt]	[Alt]	
Eraser	[$]	[$]	
Grabber	[^]	[^]	
Group Selection	[Ctrl] + [G]	[⌘] + [G]	
Motion	[0]	[0]	
Nudge Backwards (when	[Alt] + Up Arrow]	[Alt] + Up Arrow]	

TOOLS MENU

COMMAND	WINDOWS	MAC OS X	CUSTOM
Transform tool is selected)			
Nudge Forwards (when Transform tool is selected)	[Alt] + [Down Arrow]	[Alt] + [Down Arrow]	
Paint	[#]	[#]	
Paint Multiple Drawings	[Shift] + [Alt]	[Shift] + [Alt]	
Peg-Only Mode	[M]	[M]	
Scale	[9]	[9]	
Select Drawing Objects	[!]	[!]	
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]	[⌘] + [Shift] + [G]	
Zoom	[%]	[%]	

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]	

VIEW MENU			
COMMAND	WINDOWS	MAC OS X	CUSTOM
Rotate Counterclockwise	[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]	[⌘] + [F]	
Zoom In	[X]	[X]	
Zoom Out	[Z]	[Z]	

WINDOWS MENU			
COMMAND	WINDOWS	MAC OS X	CUSTOM
Colour Palette	[Ctrl] + [Shift] + [C]	[⌘] + [Shift] + [C]	
Exposure	[Ctrl] + [Shift] + [E]	[⌘] + [Shift] + [E]	
Function Editor	[Ctrl] + [Shift] + [F]	[⌘] + [Shift] + [F]	
Minimize		[⌘] + [M]	
Pen View	[Ctrl] + [Shift] + [N]	[⌘] + [Shift] + [N]	
Properties view	[Ctrl] + [Shift] + [P]	[⌘] + [Shift] + [P]	
Scene Manager	[Ctrl] + [Shift] + [M]	[⌘] + [Shift] + [M]	
Timeline	[Ctrl] + [Shift] + [T]	[⌘] + [Shift] + [T]	