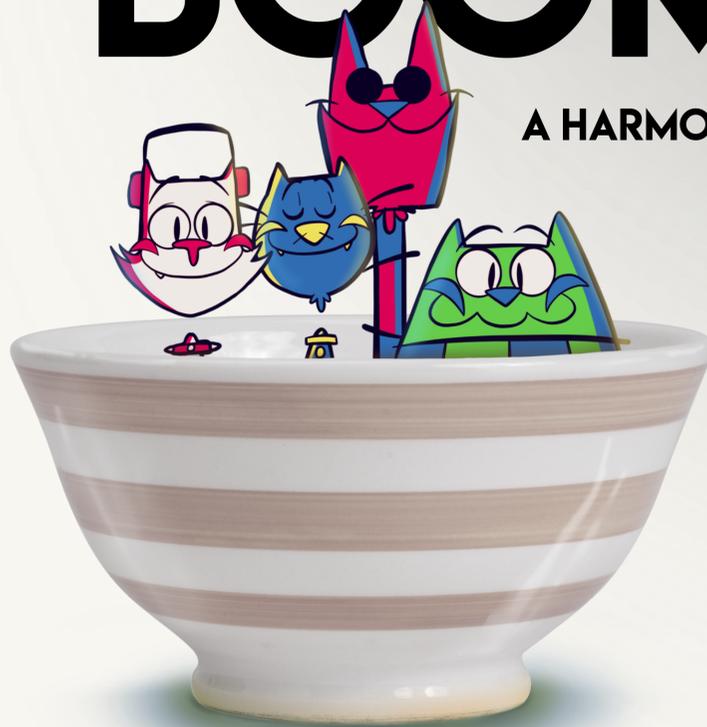




TOON BOOM KA BOOM!

A HARMONY RECIPE BOOK



Core¹

OLI PUTLAND

TOON
BOOM

KA BOOM!



Core¹

Publication date: 3/11/2022

The Author of this work is Oliver Putland

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I find most instructional manuals boring.

Cookery books on the other hand?

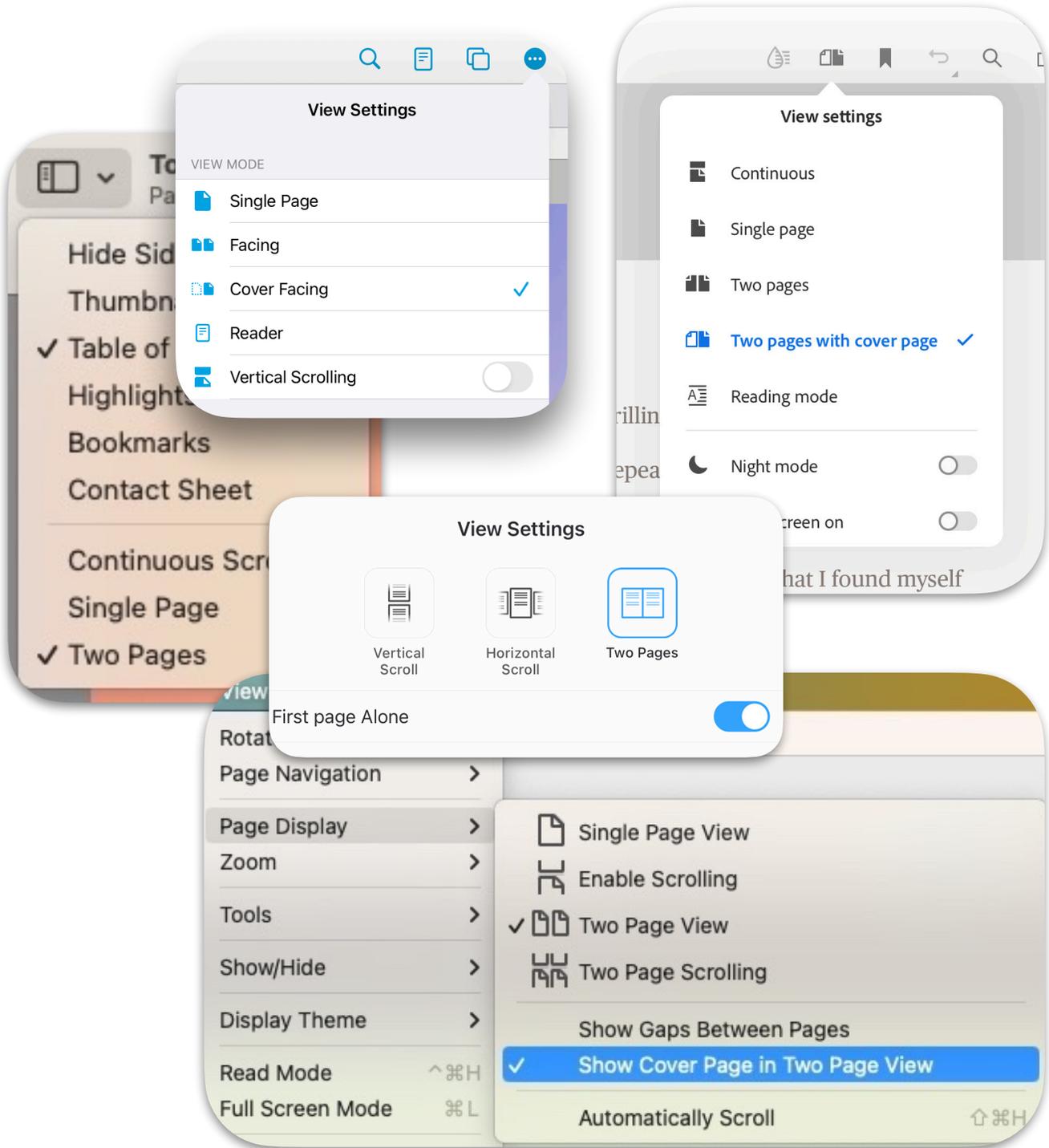
Well, even if you have no interest cooking, the act of flicking through the glossy pages revealing dish after dish in their glistening, lick-able glory is often enough to satisfy a pang of creative reluctance, and before you know it, you're tottering into the kitchen- armed with ingredients you wouldn't normally touch with a ten foot pole.

ToonBoom Harmony is so huge a program that over the years I've begun to see it as both a farmer's market with its stall after stall of fresh, inspiring ingredients as well as a kitchen, with all the finest gadgetry to turn out delightful and inspiring creations time after time.

These books are the product of years of my personal research and development. I have used all the recipes in this book for one production or another and have honed and modified them to produce a compendium of solutions which should allow anyone to take my hard earned R&D'd working methods and integrate them into anything from a simple 30 second student skit, to a fully animated feature.

Bon appétit!

Before
we
start...



Double Page Spread

This e-book is intended to be read as a double page spread.

In order to follow the recipes more easily, PDF viewers must be set to 'Two Page Spread with Cover Page'

Apple & Android Tablets

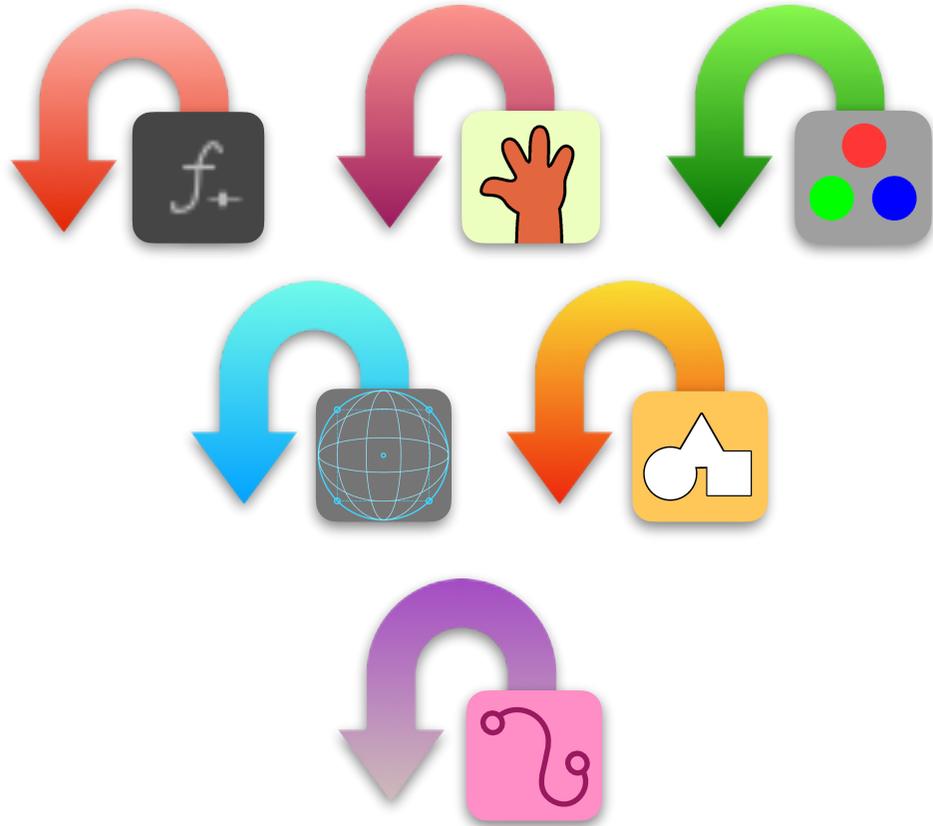
Xodo or Adobe Acrobat

Mac & PC Desktops

Mac Preview, Xodo or Adobe Acrobat

Phones

iPhone & Android - Xodo or PDF Extra



How to use this book

Unlike any of the other Kaboom books, this one is kind of odd.

It's essentially full of all the fundamental recipes that need to be repeated in all the other books, laid out here so that I don't endlessly repeat myself.

This book is purely supplementary and that is why there is an online version available for free on my site and will always be.

It may change and get bigger in the future, so be aware of that.

In the other books, you will come across icons which tell you to refer to recipes contained in this book and there may be new ones on the horizon, so keep your eyes peeled for 'em!



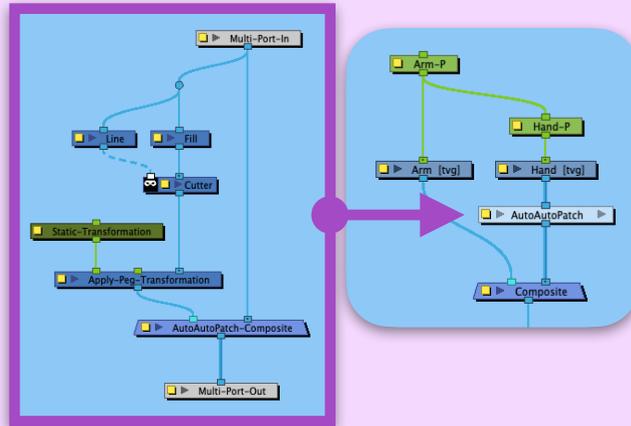
Knowledge Required

This book is NOT a tutorial book teaching you how to make whole puppets from scratch.

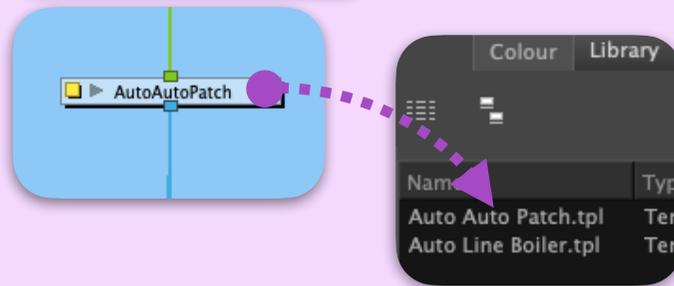
If you have NEVER used Harmony before, I suggest you read my other book first - 'How To Rig in Sweet Harmony', and follow the working methods there.

This book is for people who understand the basics of how ToonBoom Harmony Premium works and wants to know how to take those skills and enhance them with more flavour and knowledge to take their rigs further.

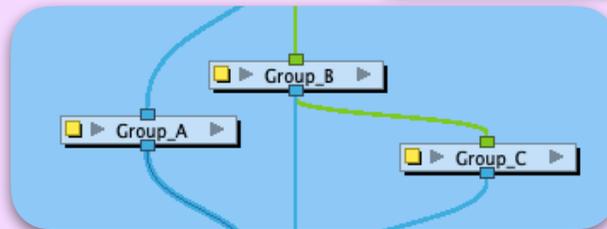
1



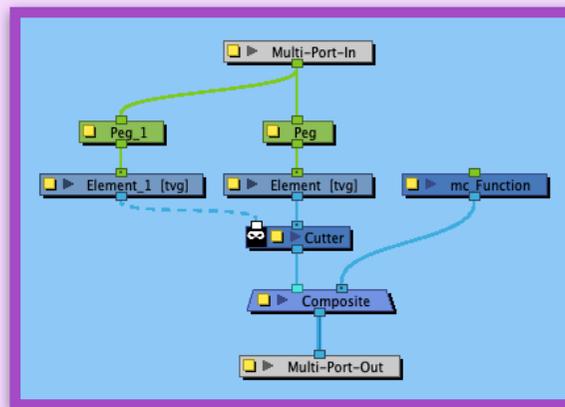
2



3



4



Groups

I use Groups. A LOT.

There are four reasons for this.

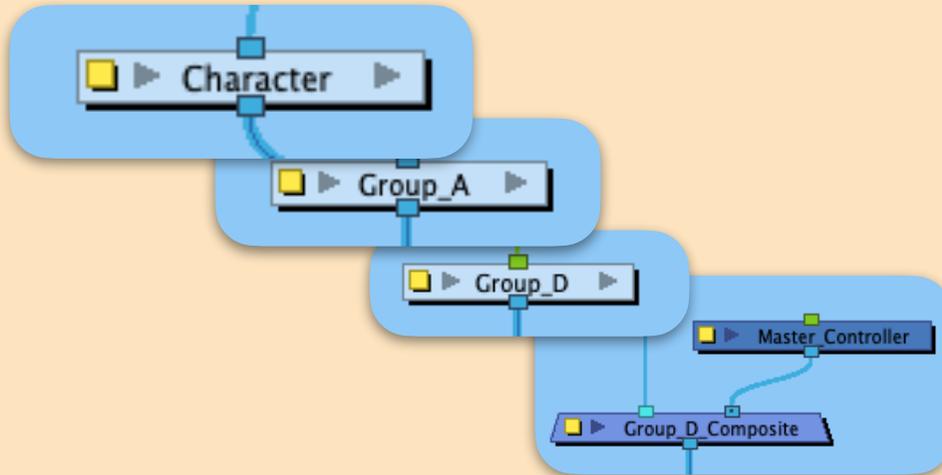
1. They make using the Node view faster, cleaner and easier to navigate
2. They allow you to reuse and store your recipes more easily
3. They allow me to teach a concept more easily by labelling certain areas, clearly.
4. Master Controllers are more reliably managed when contained inside easily bundled Group clusters

Throughout the guide I will use Groups.

Even if you may not normally use Groups in your own personal working routines, I would strongly urge you to follow my lead in this while referring to this book as it will make following the recipes MUCH easier.

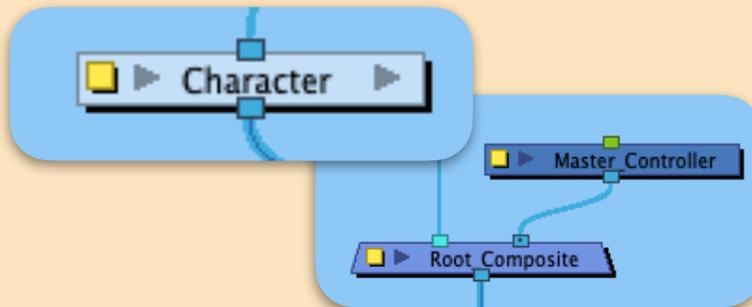
Local

Top > Character > Group_A > Group_D



Root

Top > Character



Local vs Root

Local

In this book I make all Master Controllers LOCAL. That is to say, locally attached INSIDE THE SAME GROUP AS THE THINGS THEY ARE CONTROLLING.

The benefit of this is you can put your Grouped recipes into the library for easy reuse- and they are ready to go!

Remember to refresh your MCs if you are shifting the entire groups around hierarchies by using the Show/Hide controls button. If you move the MC from its original group, or rename the path in some way, the script will not know where anything is and the MC will need to be remade.

Root

If however you want your controls to appear on a completely separate screen altogether, Local may not be the method you wish to use, and so will have to re-create the Master Controllers on a puppet by puppet basis at the ROOT of your puppet's group hierarchy when the puppet is near completion so that they stay working.

Open GL Settings

- Enable Tone and Highlight
- Enable Cutter
- Enable composite passthrough for all effects

- Enable Colour Override
- Enable Glue Node

General & Advanced

Default Separate Position for Pegs

Stop-Motion Keyframes

Default Pass Through Composite

Flat Tool Toolbar (Requires Relaunch)

Display Cardinal Coordinates

Advanced Display

Support Overlay and Underlay Arts

Element Node "Animate Using Animation Tools" Default Value

My Preferences

To save repeating myself, there are certain key preferences which must be set as shown for these recipes to work properly. As well as the Open GL settings shown, these are:

1. Key-framing Functions set to 'Separate' for 'Position'
2. Stop-motion Keys as the Default
3. Pass Through Composites as Default
4. Flat Toolbar
5. No Cardinal Coordinates (I.E. No North South East West)
6. Advanced Displays (I.E. More than one Display allowed)
7. Support for Overlay & Underlay Arts
8. No Animation Tools allowed on any Drawings (unless otherwise stated) - (I.E. No Keys created on Drawing Layers- Pegs can handle that task.)

Core

Stirring, Baking, Grilling, Mixing, Folding, Whisking...

Methods that are repeated again & again in cookery.

Well, it's the same with Rigging.

There were methods and routines that I found myself writing and rewriting over and over.

So I decided to collect all the repeated stuff into one little book.

This core book will remain as a free online only book for anyone to look at for reference.

And yes, this book may actually change and even get bigger from time to time if I feel there are some techniques that need to be reused over and over again.



Auto Auto Patch



Function Assists



Colour Selectin'



MultiPoint Sphere



Z Depth Sandwiches



Semi Rigged Clean Up





Auto Auto Patch

Auto Patches are useful things to have in a rig from time to time, but wouldn't it be great if you didn't have to manually separate the Line Art from the Colour Art for every drawing to make it work?

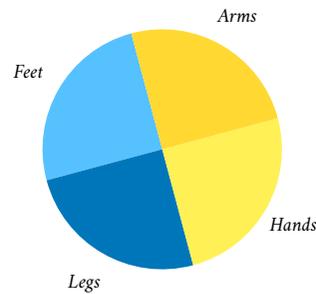
The Auto Auto Patch is a simple little recipe does just that, allowing you to join things like hands and feet to arms and legs without all the extra manual separation work every time you draw a new hand or foot position.

Since it uses a Cutter however, I would urge you to use this recipe sparingly.



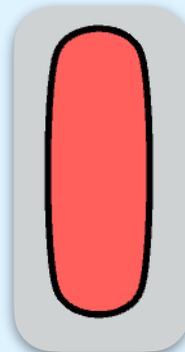
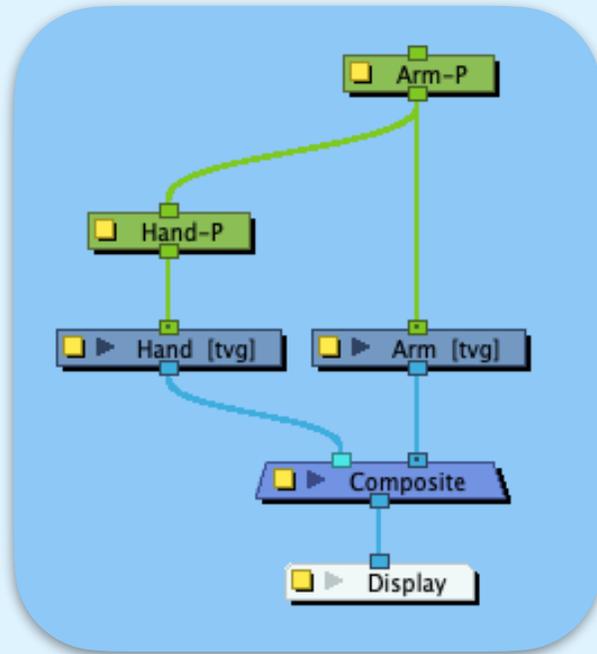


Auto Auto Patch



Ingredients

- Colour Override or Colour Selector Node
- Peg and Drawing
- Cutter
- Composite
- Apply Peg Transformation
- Static Transformation



Auto Auto Patch

Method

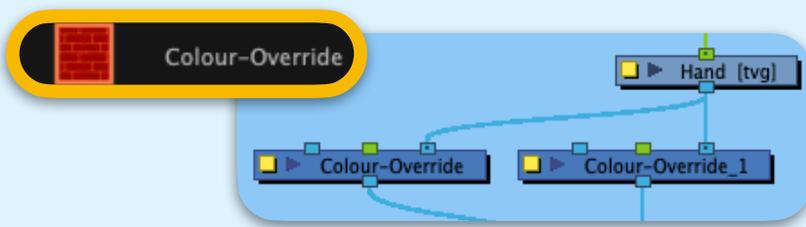
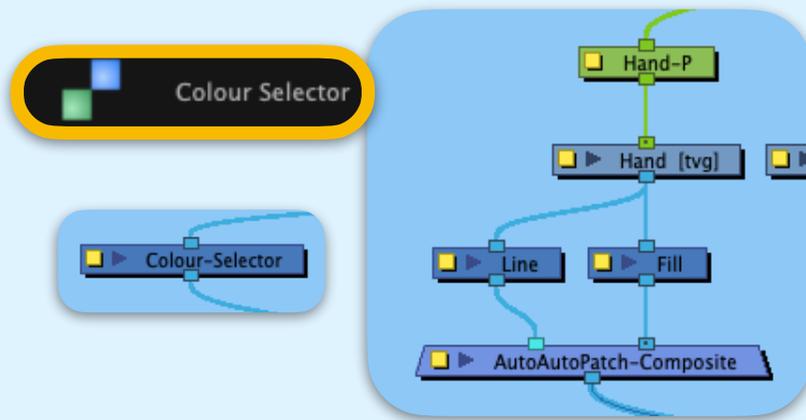
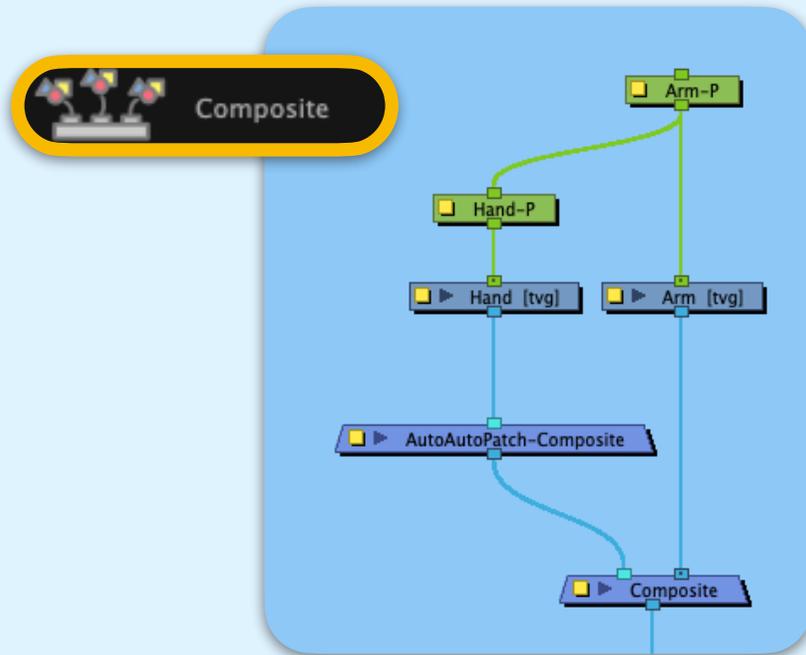
1. Create at least 2 Peg & Drawing setups as shown.

For this recipe demo I'm going to make an arm with an attached hand, so label the drawings appropriately.

Obviously when you use this recipe you can draw whatever you like, but this is what I use this for the most

2. In the Colour window, label two colours as 'Line' and 'Fill'

3. Using the colours you have just named, draw an arm on one Drawing node, and a hand on the other. Don't bother to separate the line and fill into their own art sub layers.

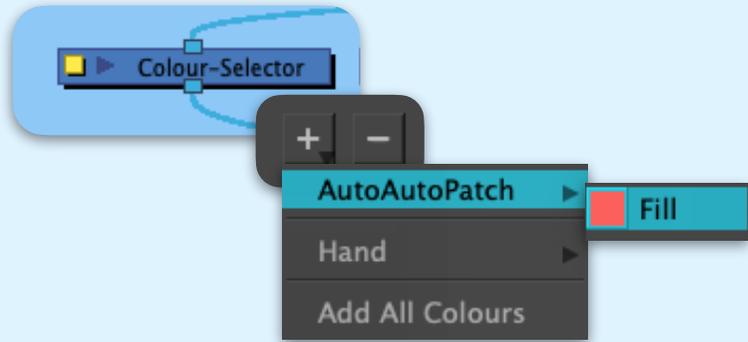


4. Get a Pass-Through Composite and attach it to the 'Hand' drawing node. Label it 'AutoAutoPatch-Composite'

The next steps depend on which version of Harmony you own.

5. If you can, get two Colour Selector nodes and label them 'Line' and 'Fill' and attach them as shown.

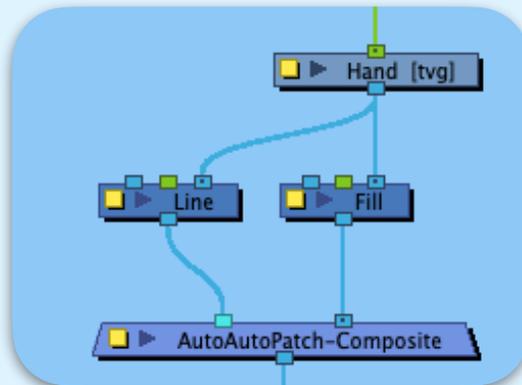
If you don't have access to Colour Selector nodes, use 2 Colour-Override nodes instead (attaching the drawing to the right blue inputs) and go to step 7.



Colour	Name
	Fill

A screenshot of the Toon Boom software interface. A 'Colour-Override' node is highlighted. Below it, the 'Colours' panel shows a list of colors with 'Fill' selected. The 'Individual Colour Overrides' panel shows a table with 'AutoAutoPatch' and 'Fill'.

Matte	Colour	Sample
AutoAutoPatch	Fill	

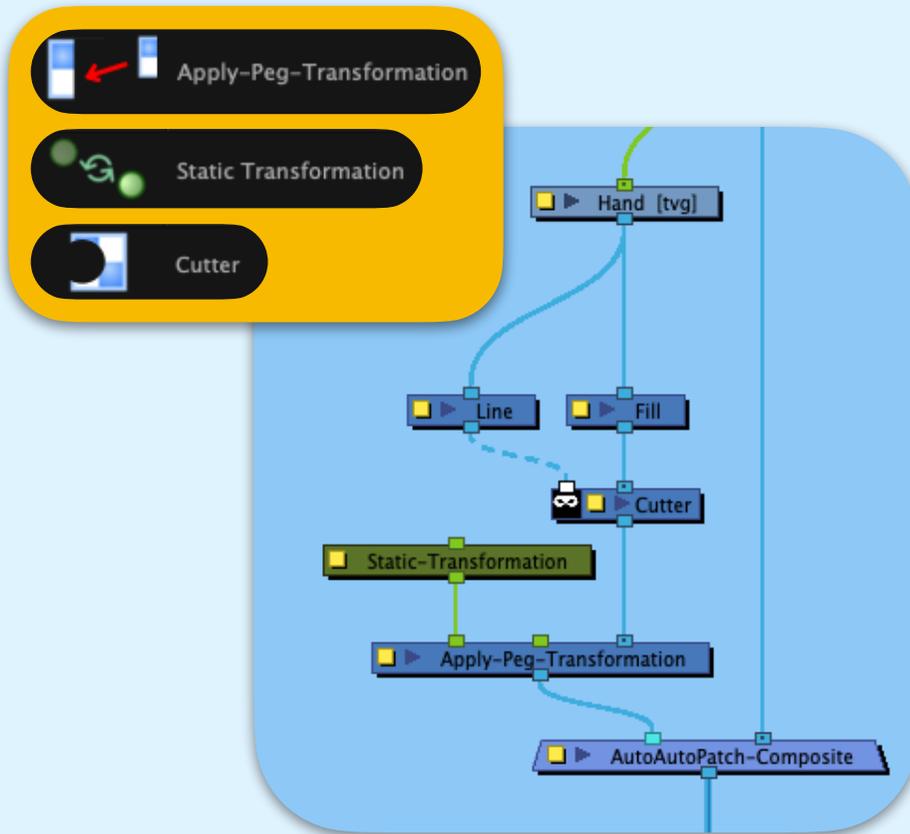


6. For Colour-Selector nodes, go to their properties and press the 'Plus' button, then select the node's colour from the palette list- I.E: select the Line colour for the Line node and the Fill colour for the Fill node.
Then go to Step 10

7. For Colour-Override nodes, go to their properties and first press the 'Render Selected Colours Only' tab, then in the pull down menu select 'Render Selected Colours'.

8. Finally select your colour from the list on the left ('Fill' in this case) and press the white triangle button.

9. Repeat steps 7-8- for the 'Line' Colour-Override node.



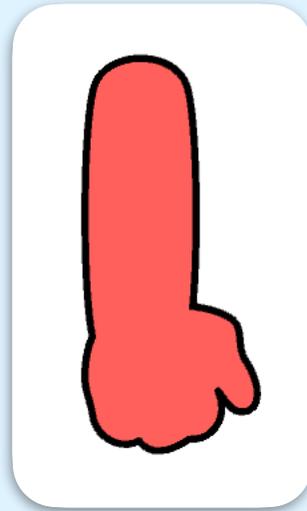
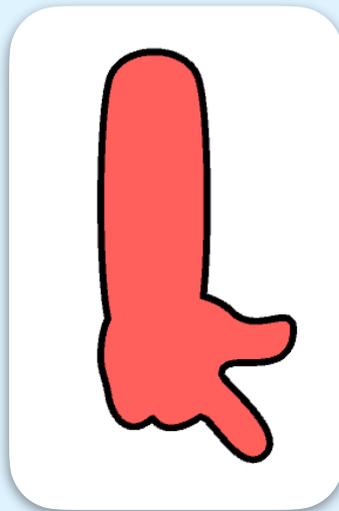
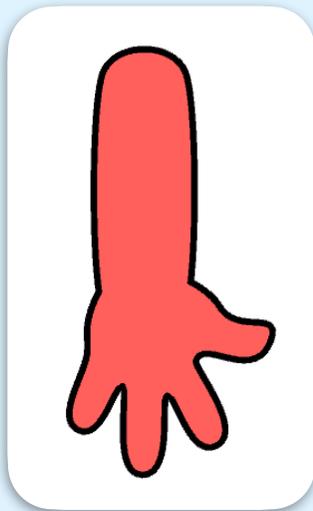
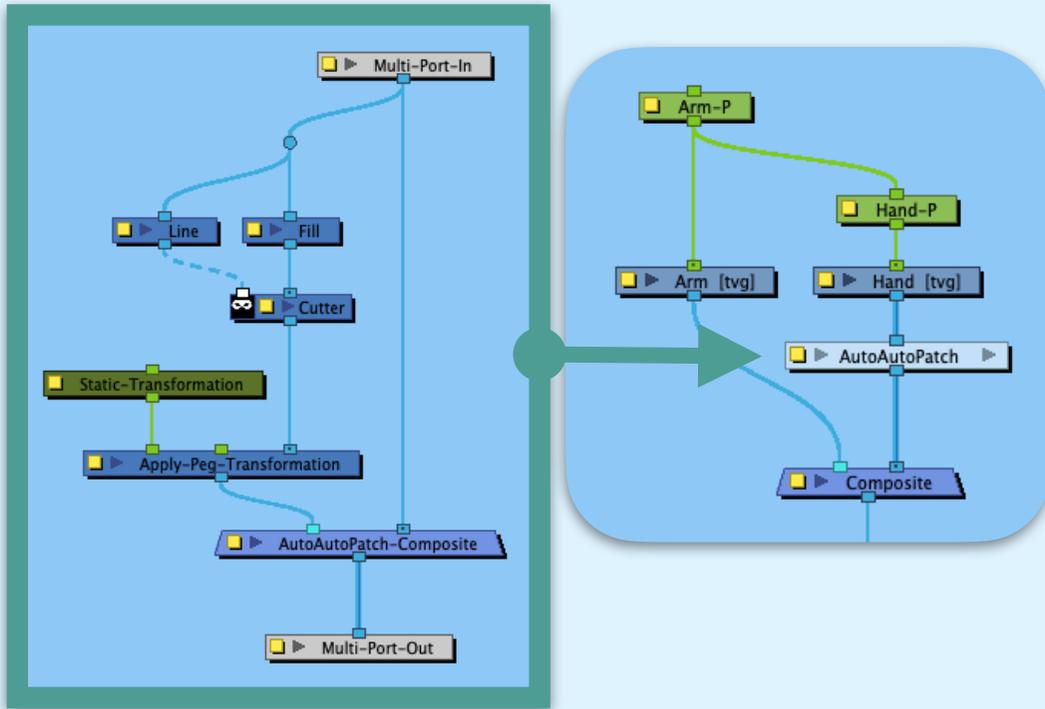
Static-Transformation

Active	<input checked="" type="checkbox"/>
(x) Axis	0
(y) Axis	0
(z) Axis	0.01

10. Now get a Cutter, an Apply-Peg-Transformation and a Static-Transformation node and attach them all as shown.

11. Next, go to the properties of the Static-Transformation node and tick the upper Active box and set the (z) axis to 0.01.

Depending on how many things you wish to 'patch together, this number may need to be a little bigger, but try to keep the number between 0.01 and 0.09, otherwise the images will start to look odd, particularly when there are camera moves as you are effectively 'widening' the Z distance between line and fill.



12. Finally group things as shown and label the Group: 'AutoAutoPatch'

You now will have a hand drawing which is magically attached to the arm just like a normal auto patch, but without requiring you to manually separate the sub-art layers every time you create a new drawing!

Be careful to not use this technique too many times within your puppet, as the cutters may make it too heavy.

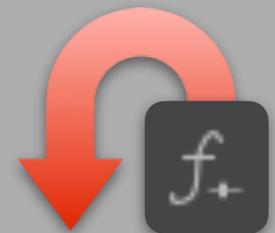


Function Assists

A Function Assist is a kind of quick, easy-to-make Master Controller that allows you to change the value or values of functions easily by using a Button, Slider or Joystick.

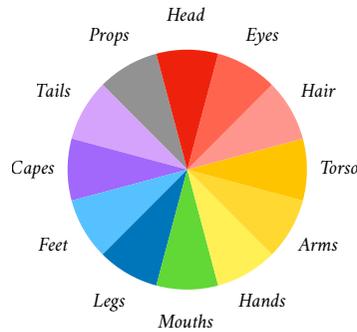
It has become such a staple in my rigging work, that I don't think of adding four or five of them into even the simplest of rigs for easy animating.

It's particularly useful when showing and hiding certain controls such as Deformation Scales which would otherwise require quite elaborate means to turn them on and off.



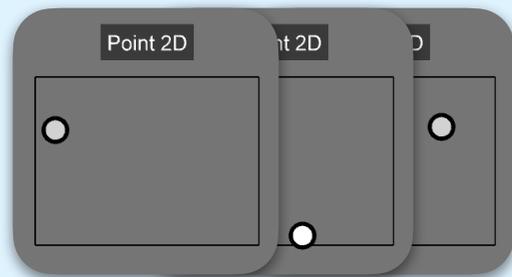
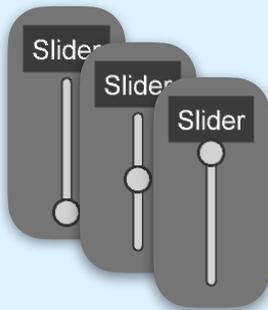
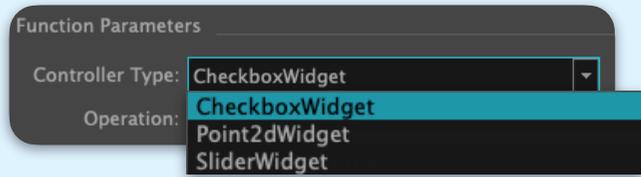


Function Assists



Ingredients

- Master Controllers created by the Function Wizard
- Any other node



Function Assists

Method

1. Select the node or nodes you need to control. This could be any node from the vast node library.
2. Press the Function Wizard button to start the process.
3. Select the type of controller you require:

Controller Type

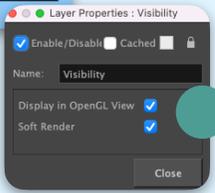
4. **Checkbox.** If you want to turn something on or off, or enable and disable an entire node or several nodes, select this.
5. **Slider.** If you want to control something using a single type of motion in a linear more & less fashion, select this.
6. **Point 2D.** If you want to control something using two types of motion-Scale X&Y or Position X&Y etc, select this.

Controller Type: **CheckboxWidget**

Operation: **Toggle Attribute**

- Toggle Attribute
- Show/Hide Node Controls
- Enable/Disable Node
- Show/Hide Deformers

Visibility



Layer Properties: Visibility

Enable/Disable Cached Lock

Name: Visibility

Display in OpenGL View

Soft Render

Close

Attribute: **OGLRENDER**
SOFTRENDER

The Visibility node's unique Attributes



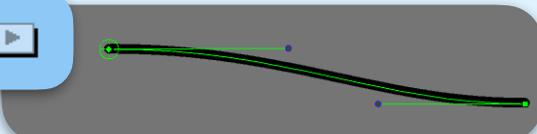
Deformation-Scale **Weighted-Deform** **MasterController**




OglBypass **RenderPreview** **Visibility** **Visibility**



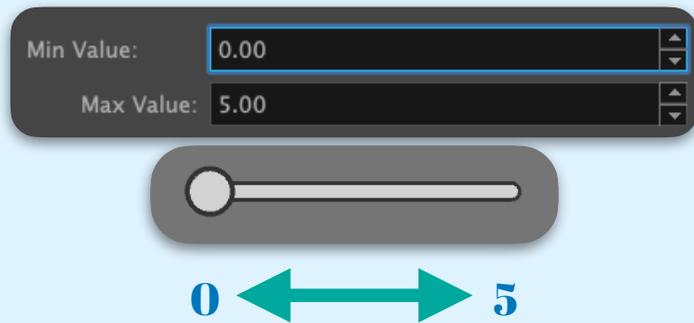
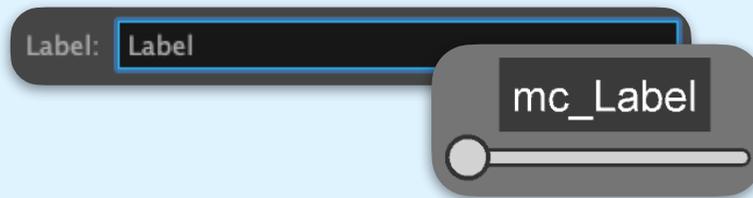
Deformation



Operation

This menu is only available when using Checkbox Controllers.

7. **Toggle Attribute** turns an Attribute on and off. You select exactly what is turned on and off in step 11 and it is VERY node specific- Every node type will have their own particular attributes. The example shown is for the Visibility node.
8. **Show/Hide Node Controls.** Essentially this acts as the Show/Hide Control Button but just for the nodes you selected in step 1- very useful for Deformation Scales, Weighted Deformers and even Showing and Hiding whole Master Controllers that you don't wish to see all the time.
9. **Enable/Disable Node.** This is very good for turning single nodes (or indeed whole parts of a rig) on and off you select in step 1. Super useful for working practices that require toggling working views such as Open GL bypasses, Render Previews & Visibility nodes.
10. **Show/Hide Deformers.** This literally shows or hides the deformer nodes selected in step 1.



Attribute

11. This section as mentioned previously, changes depending on both the node and the control method selected. In this example, the Attributes shown are for a Slider Control Widget for a Peg node. Here you select the function that the Slider's value will alter.

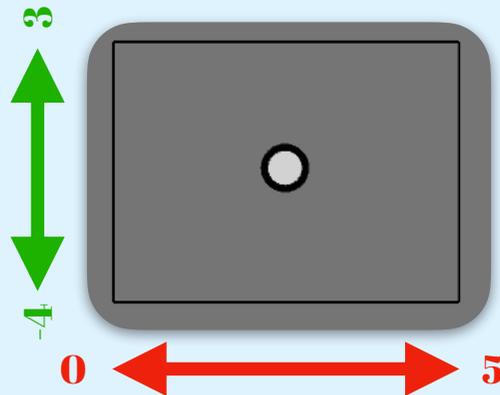
Label

12. This is where you label your Master Controller. However, since it automatically adds the letters 'mc_' as a prefix and it tends to look ugly on screen, I tend to not make too much fuss here and manually rename the control in the MC's properties window later on.

Values

13. This is where you type the extreme values of a Slider so it knows what numbers the Slider must slide from and to. In this example, the Peg's function as selected in Step 11 is only able to change from the extremes zero to five.

XMin:	0.000
YMin:	-4.000
XMax:	5.000
YMax:	3.000

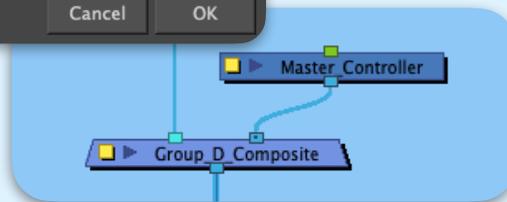


OK

Attach to composite...

Composite:

Cancel OK



14. For a Point 2D Slider, you have four values available for the Slider to use: 2 for x (left and right) and 2 for y (up and down). In the example shown, I demonstrate that the numbers for one axis maybe totally different in range and value to the other axis.

15. Finally when you are ready to make the controller, press OK

16. Select the appropriate Composite in the menu to attach the Master Controller node to and press OK

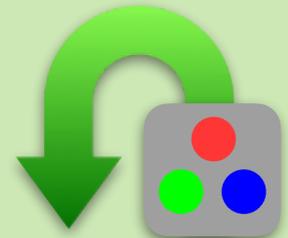


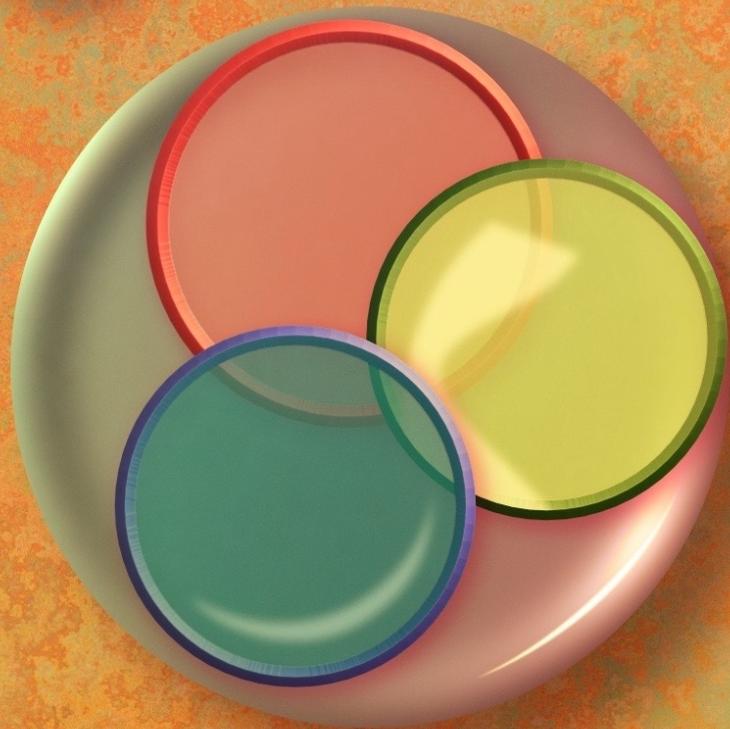
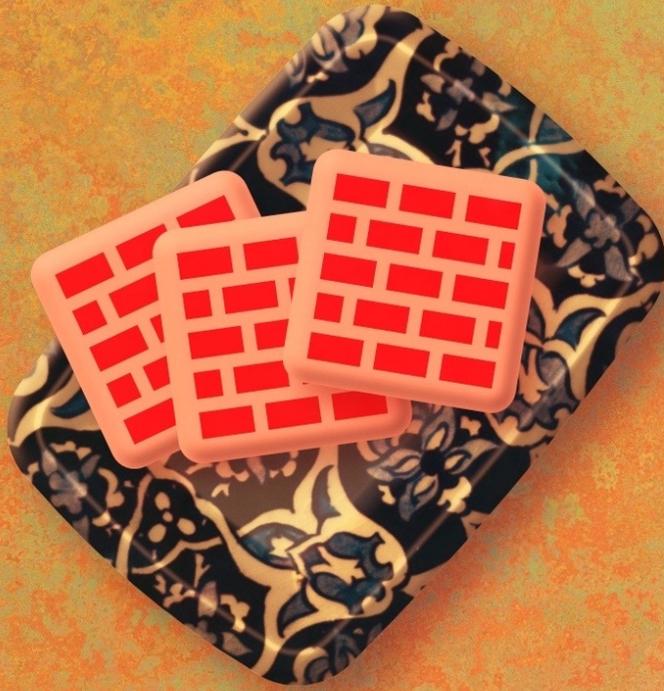
Colour Selectin'

In many of my recipes, I tend to use a combination of Sub-Art layers for masking and selection.

I also use the colours in the drawings themselves as separate elements which can have their own parameters split apart from a common starting place.

Since there are two methods for this practice and I don't want to repeat myself endlessly for each recipe, I thought I'd put the procedure here for you to refer to later as needed.





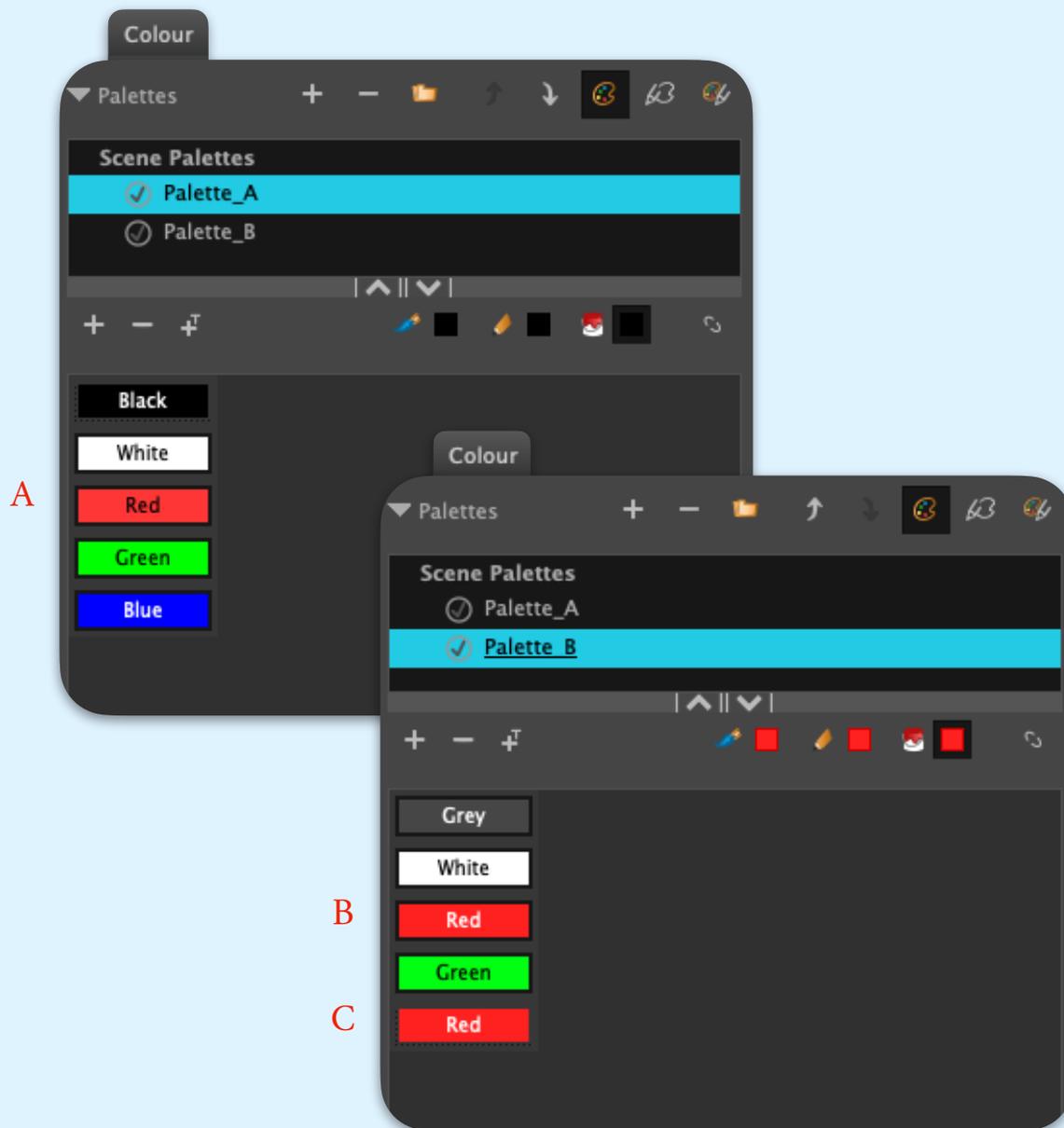
Colour Selectin'



Ingredients

- Colour Selector - Harmony 21 onwards
- Colour Override - Harmony 20 and prior

The 'Red' Colour in Palette A, has a different Colour ID to the 'Red' Colours in Palette B.



Note on Colour IDs

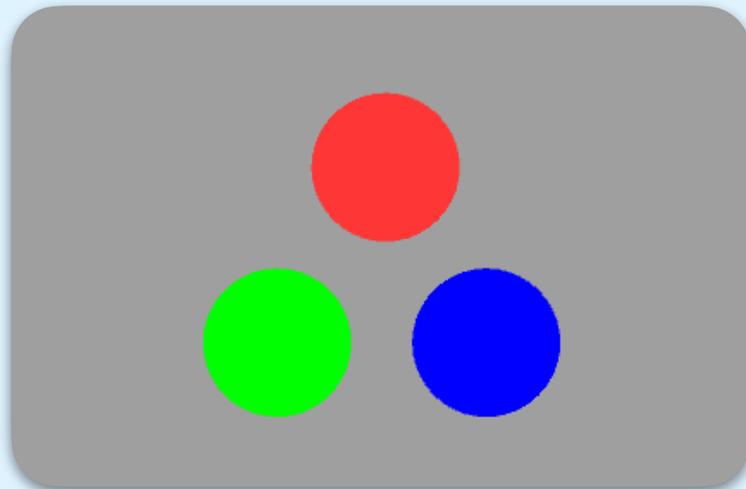
Just because a colour may APPEAR to our eyes as the same as another, the palette used and colour ID of that colour are unique and are key for this to work.

(Every colour you create automatically has its own Colour ID given to it.)

So whenever you use Colour Selector or Colour Override nodes in your creations and then put them into the Library for later use, remember they are set to work with the specific colour IDs you choose in the next few steps, and not the hue our eyes are able to see.

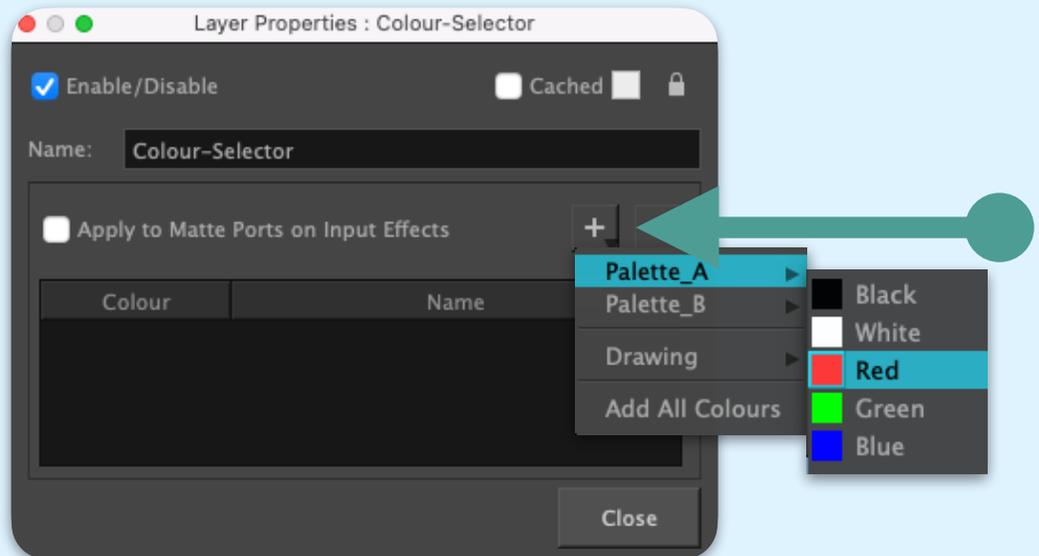
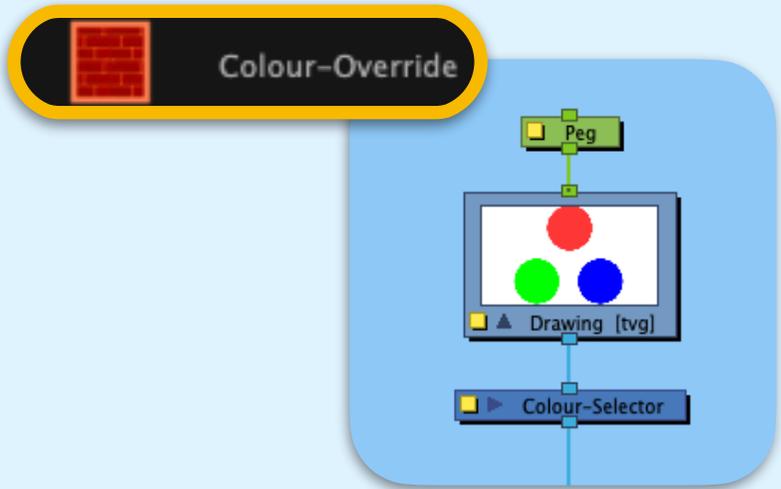
If you need to reuse them for another puppet, you can of course, but you'll need to re-select the colours used for that project instead.

This is easily forgotten, and can lead to hours of scratched heads when things don't appear to make sense at first!



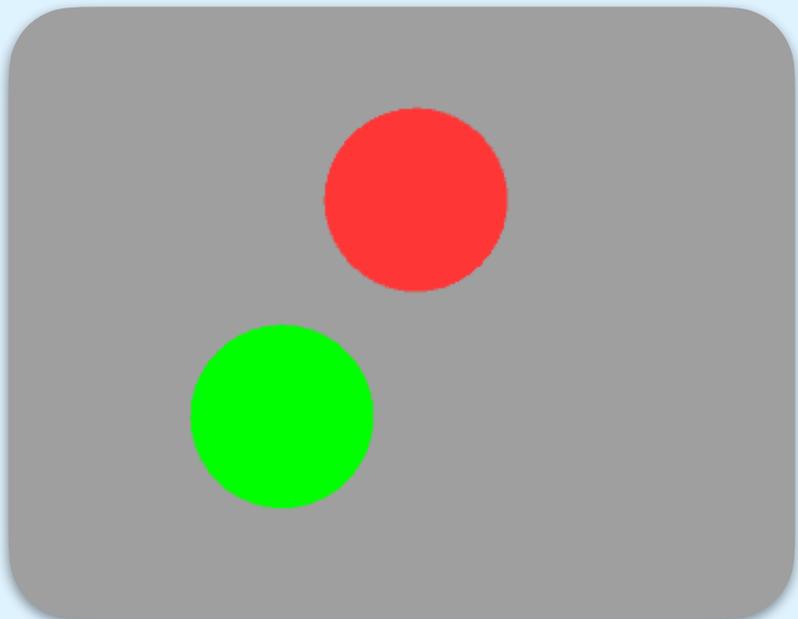
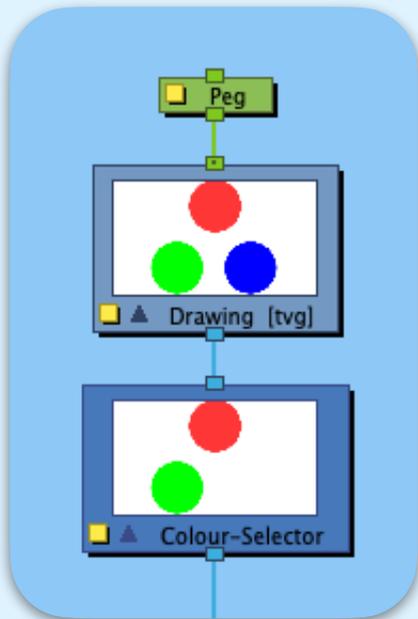
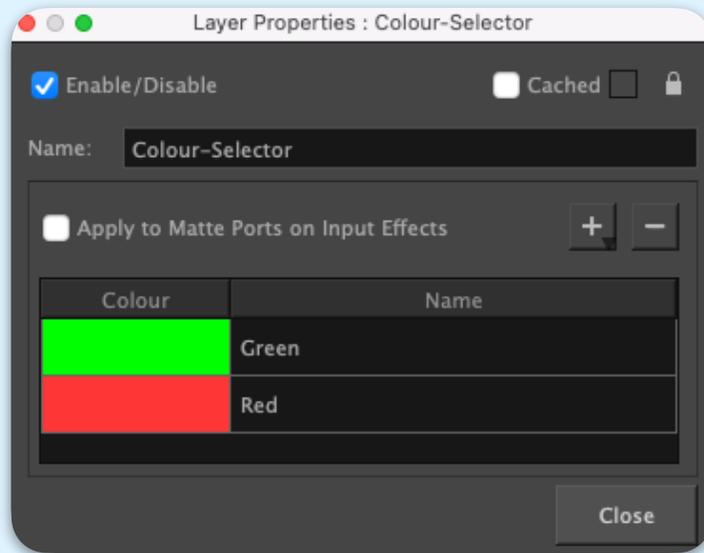
Colour Selector Method

1. Create a palette that contains the colours you wish to work with.
2. Create a drawing using the colours from your chosen palette.



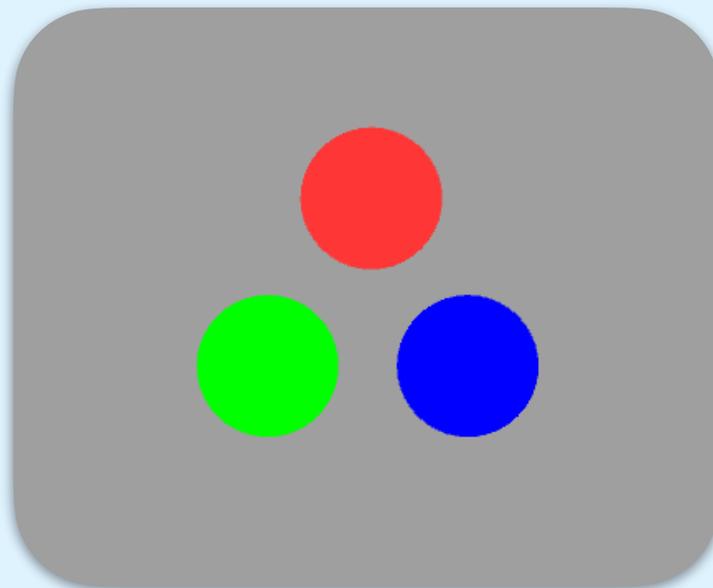
3. Plug a Colour Selector node in after the drawing node as shown.

4. Open its properties window and press the 'Plus' button.



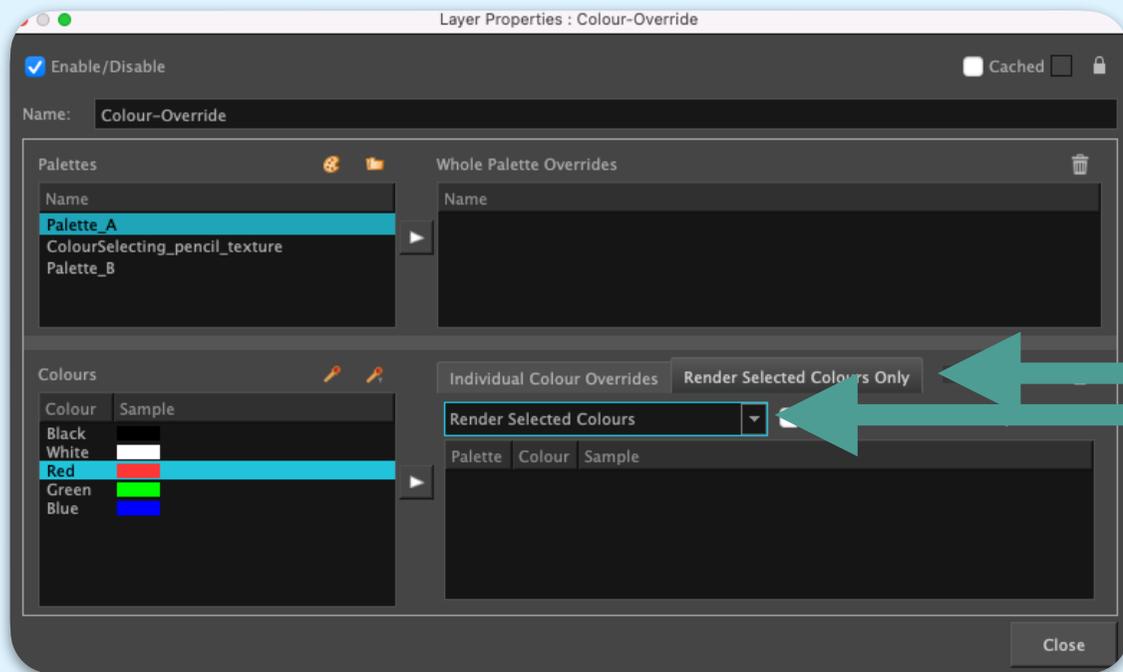
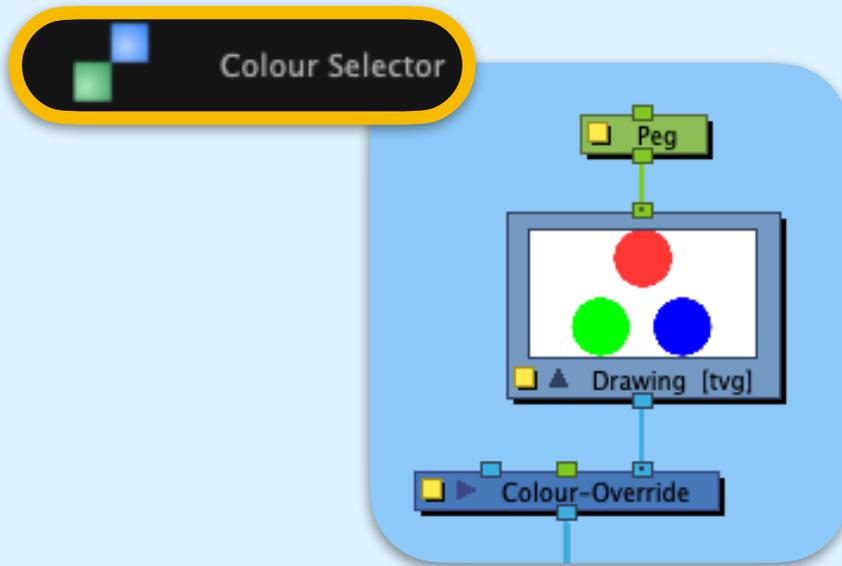
5. Select all the colours you wish to be allowed through the connection.
6. Press Close

7. Only the colours you have selected pass through the Colour Selector node.

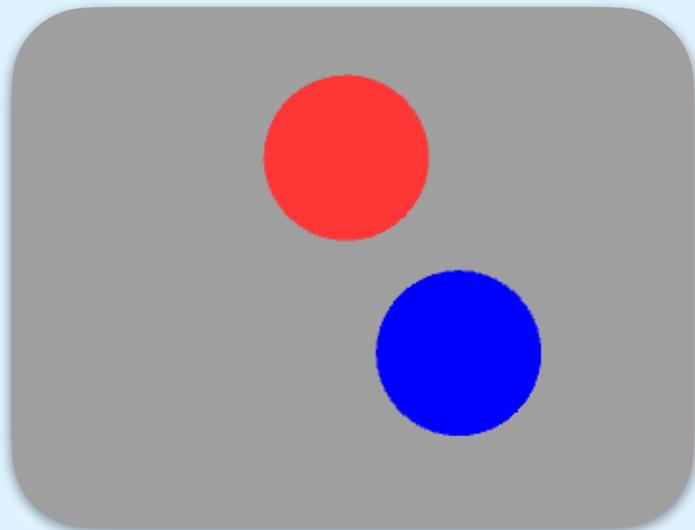
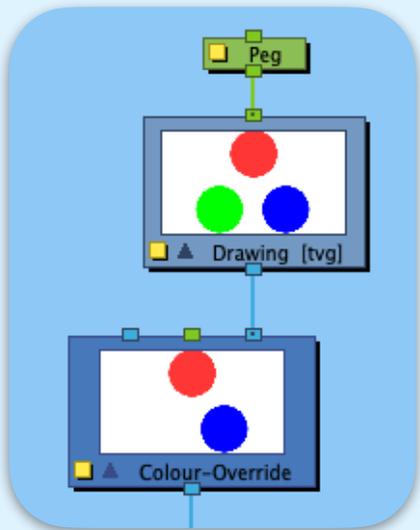
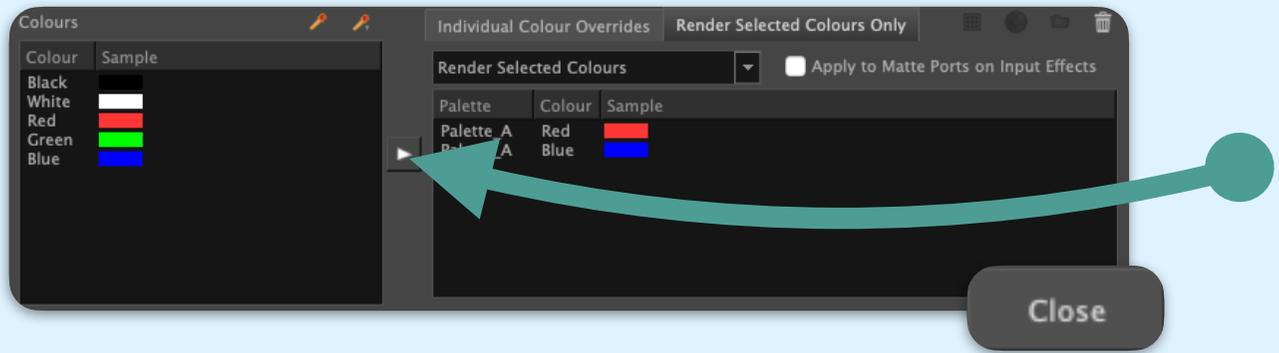


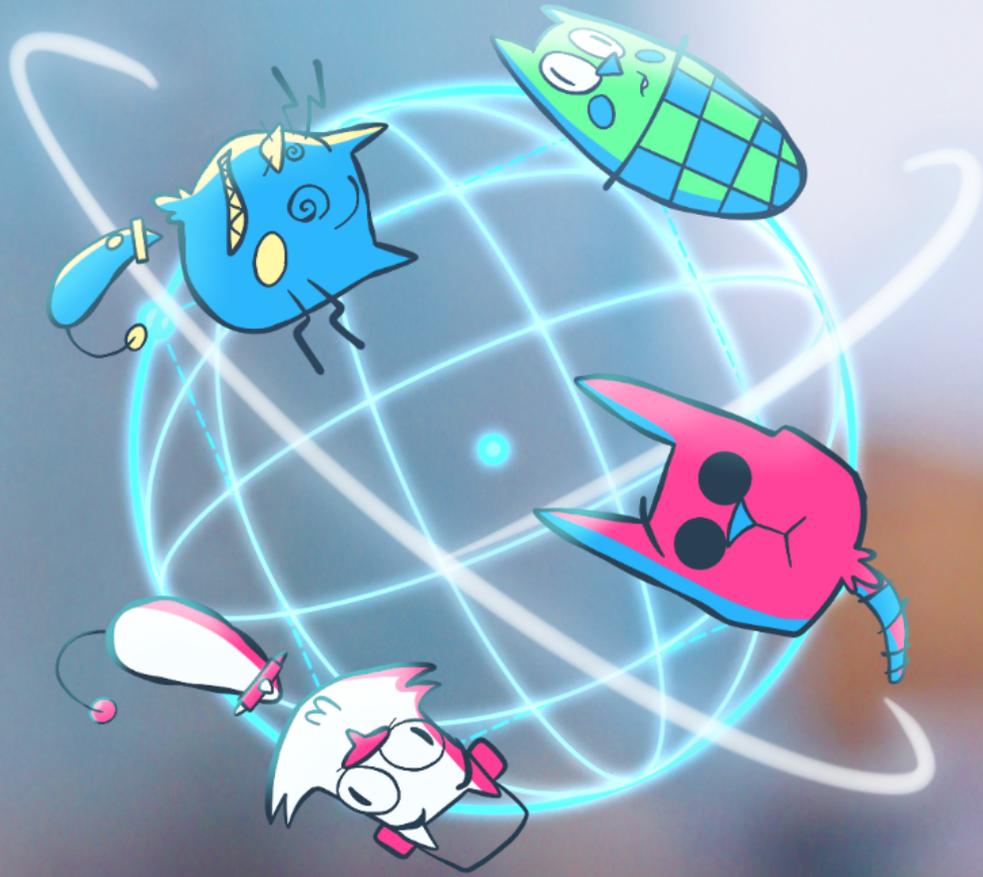
Colour Override Method

1. Create a palette that contains the colours you wish to work with.
2. Create a drawing using the colours from your chosen palette.



3. Plug a Colour-Override node into the drawing as shown.
4. Open the Colour-Override's properties and select the 'Render Selected Colours Only' tab.
5. Make sure 'Render Selected Colours' is chosen in the pull down menu.



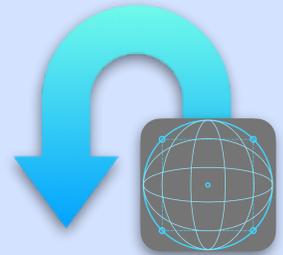


MultiPoint Sphere

This is a very happy discovery I came across when researching Mouths. I needed to create a method of moving things around in a sphere-like way without actually occupying Z depth at all. In other words- a 'flat' sphere!

The MultiPoint Sphere recipe is surprisingly simple to create and since it has several uses, rather than repeat myself endlessly, I thought I'd create a sub-recipe to refer to at various stages instead.

It's probably one of the best things I've discovered.
Certainly one of my favourites!





Expression

CONSTRAINTS

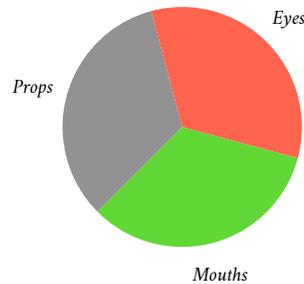
COMPOSITE

COMPOSITE

SITE

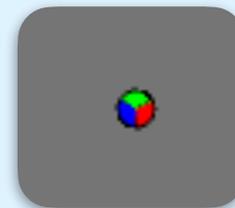
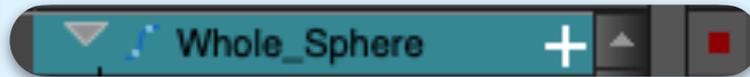
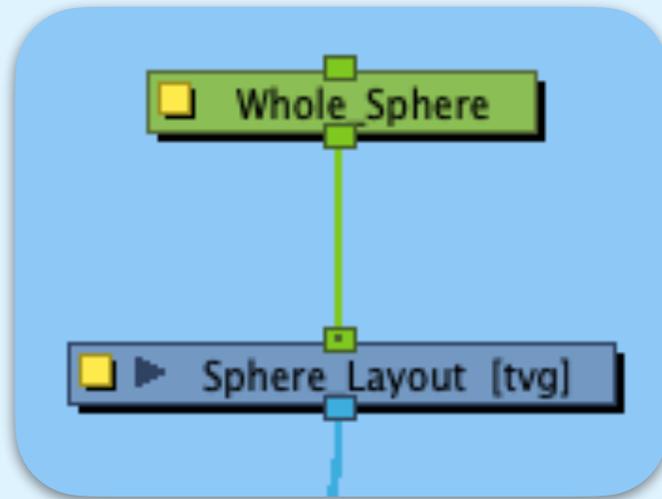
COMPOSITE

MultiPoint Sphere



Ingredients

- MultiPoint Constraint
- Expression
- Pegs
- Composite
- Drawing
- Drawing Tools



MultiPoint Sphere

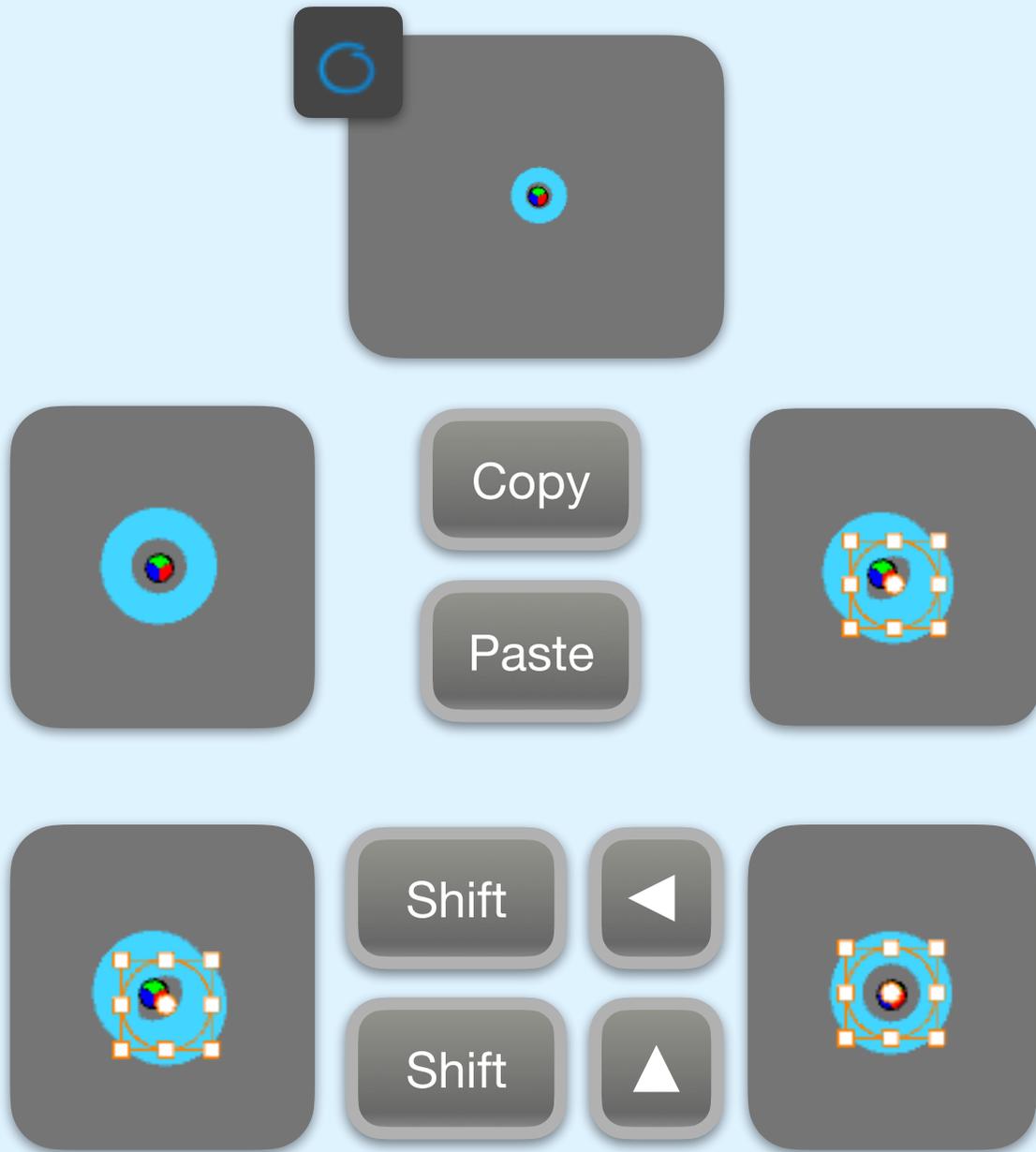
Method

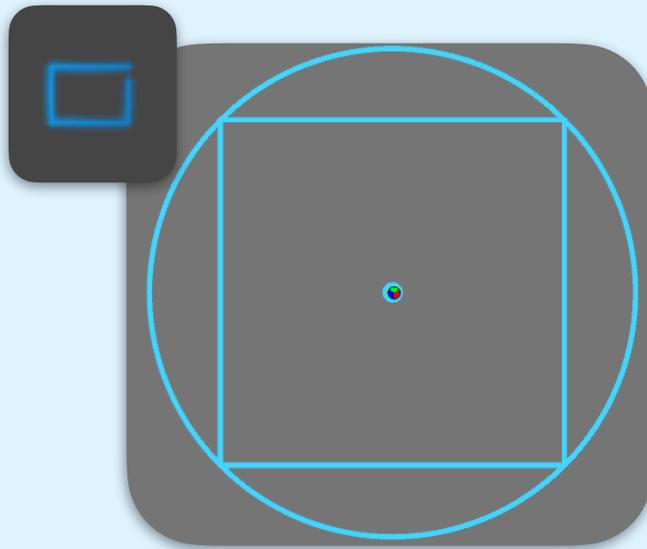
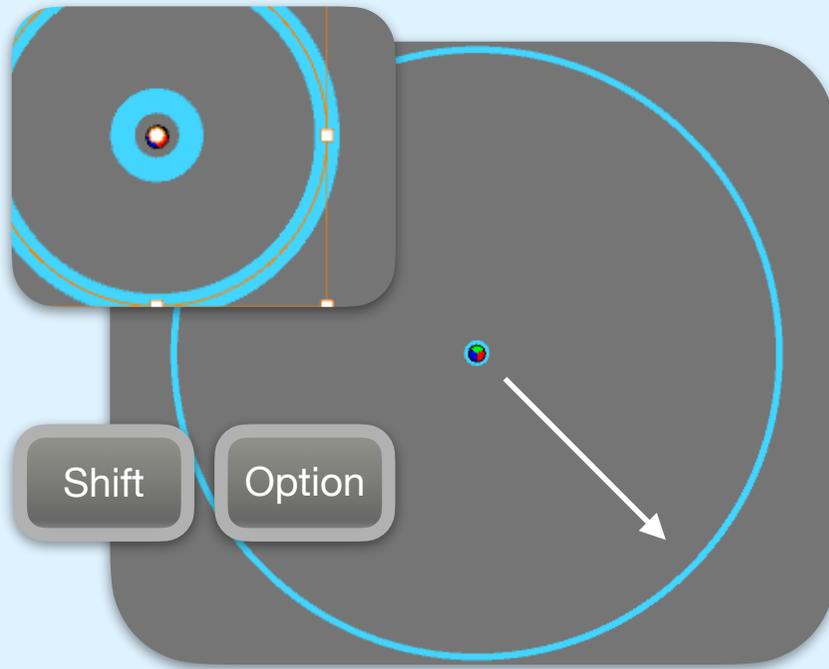
1. Create a Peg. Label it 'Whole Sphere'.
2. Add a Drawing node to the Peg. Label it 'Sphere Layout'.

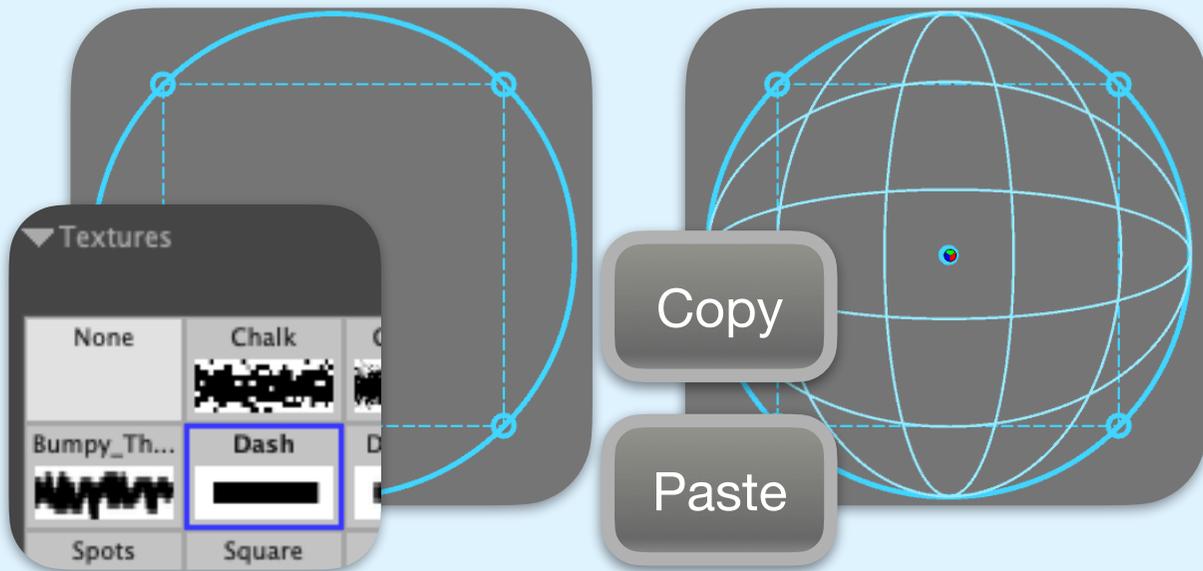
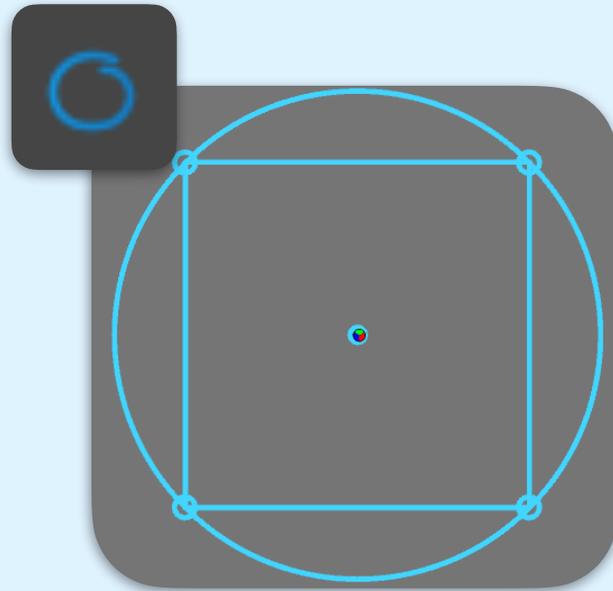
3. Create a keyframe

4. Select the Peg (Not the Drawing) and press Show Controls.

A multicoloured peg point will appear on the Camera Display. Since we have not moved the peg, this will show us 'Absolute Zero'.

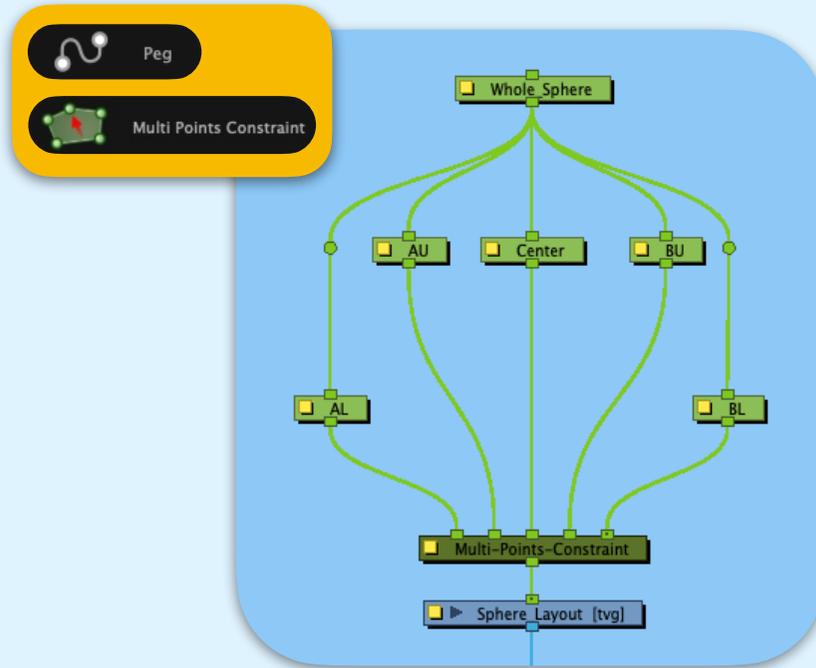






10. Draw four circles where the square hits the circle.

11. If you want to get fancy- and this actually really helps, change the square to a dotted line using a pencil texture, then copy the main circle then paste and scale it to create the 3D like lines which criss cross the drawing as shown.



Peg

Multi Points Constraint

Layer Properties : Multi-Points-Constraint

Enable/Disable

Name: Multi-Points-Constraint

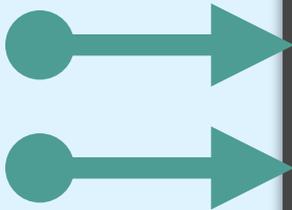
Active 100

Flatten Type Project to Plane

Ignore Internal Points

Allow Perspective Transform

Close

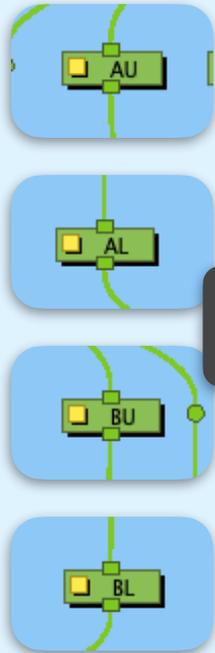
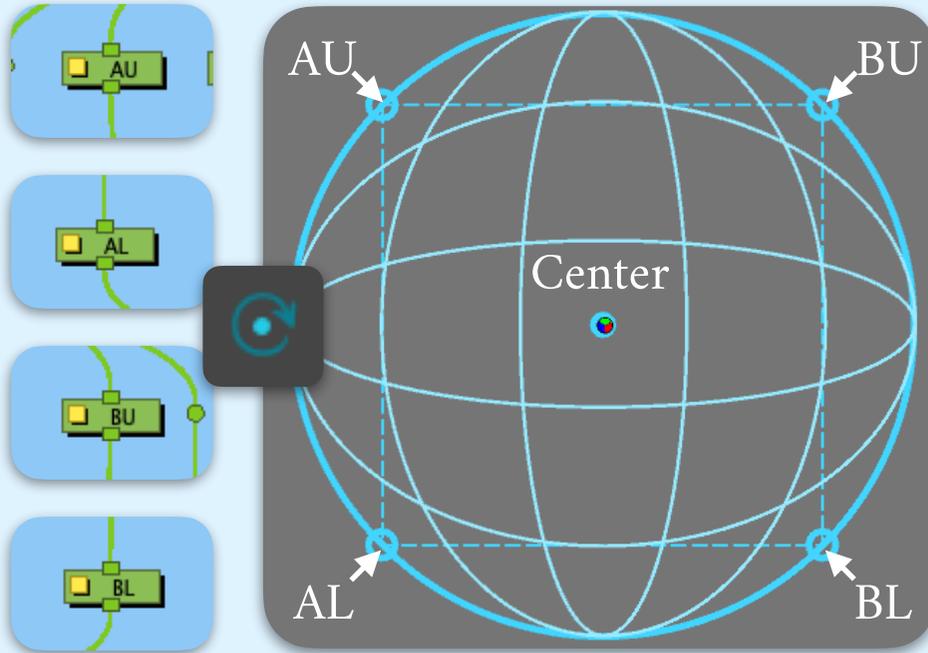


12. Now, get a Multi-Points Constraint and 5 Pegs then attach and label them as shown

13. In the Multi-Points Constraint's properties, change the Flatten Type to 'Project to Plane'

14. Check 'Allow Perspective Transform'

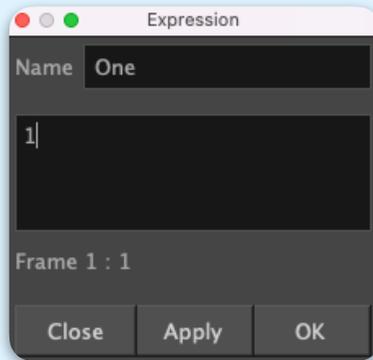
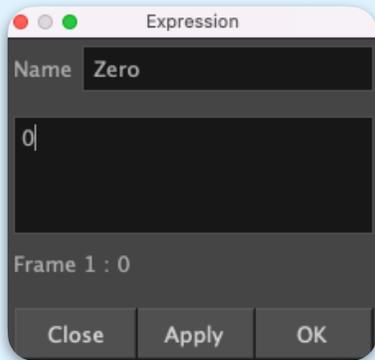
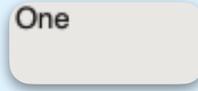
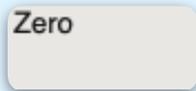
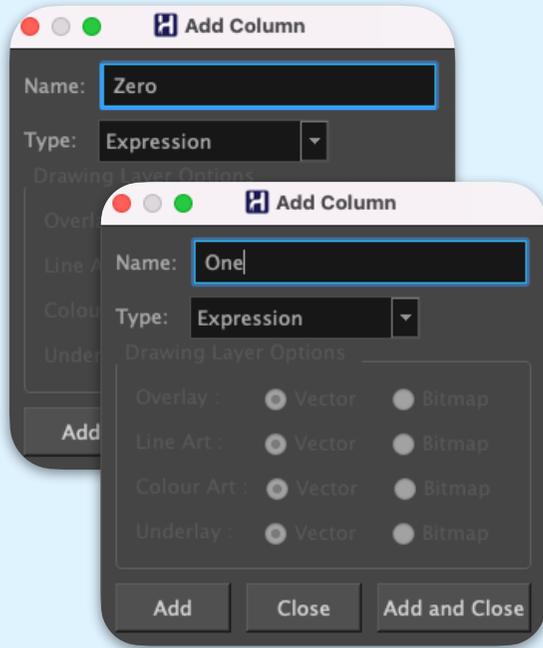
15. Hit Close.



16. Now one by one, select each of the four pegs and position their pivots using the Rotate tool as shown. The Center Peg should remain untouched at Zero.

17. Select the Center Peg and in its properties select 'Locked' under the Scale section.

18. Finally create a keyframe for all the pegs



Position

3D Path Separate

(x) Axis Center: Pos_x: 0

(y) Axis Center: Pos_y: 0

(z) Axis Center: Pos_z: 0

- Create Bezier
- Create Ease
- Local
- Bezier
- Ease
- Expression**
- Velobased **Zero**
- Connected
- Unconnected
- All
- Copy Function Link
- Paste Function Link

Scale

Locked Separate

(xy) Axis Center_ScaleXY: Scale: 1

Scale in Fields

Ignore Parent Scaling

- Create Bezier
- Create Ease
- Local
- Bezier
- Ease
- Expression**
- Velobased **One**
- Connected
- Unconnected
- All
- Copy Function Link
- Paste Function Link

Rotation

Angle z Center: Angle_z: 0

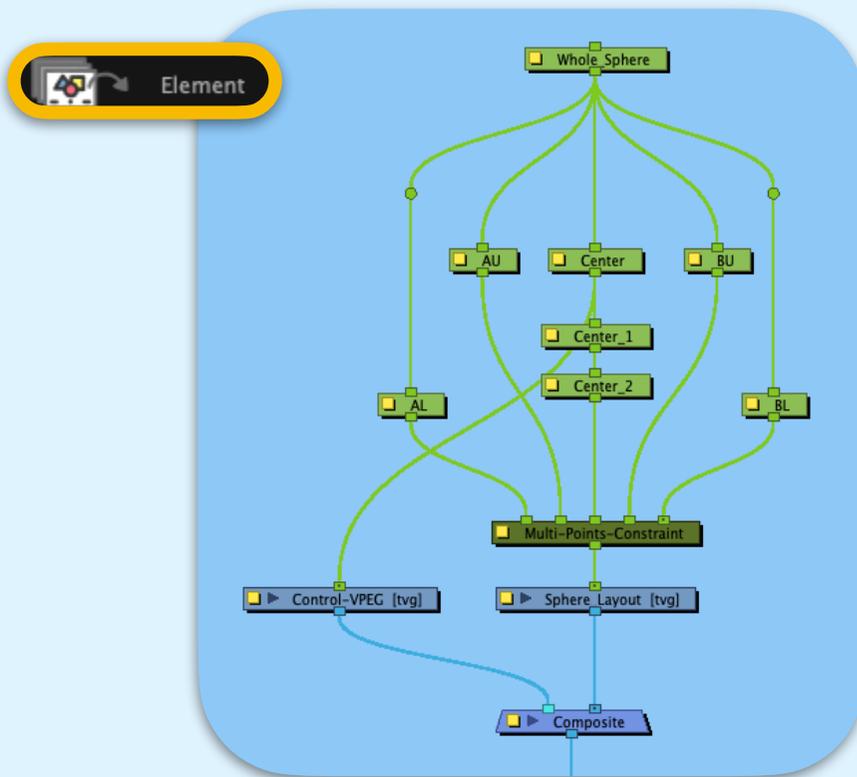
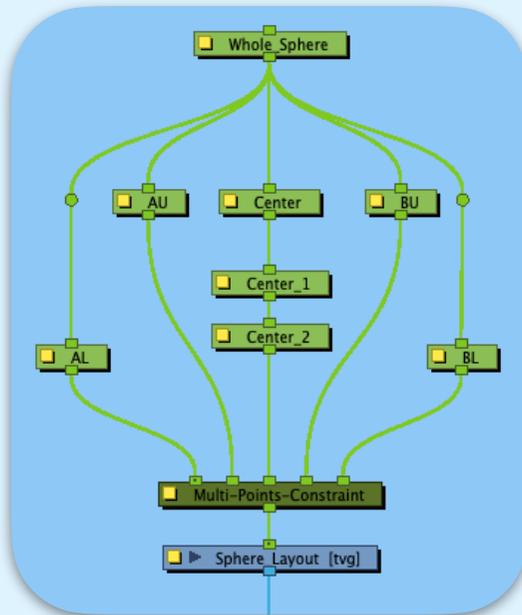
- Create Bezier
- Create Ease
- Local
- Bezier
- Ease
- Expression**
- Velobased **Zero**
- Connected
- Unconnected
- All
- Copy Function Link
- Paste Function Link

24. Now go to the properties of the 'Center' Peg and in the function pull down menus and..

25. Select Expression/Zero for (z) Axis

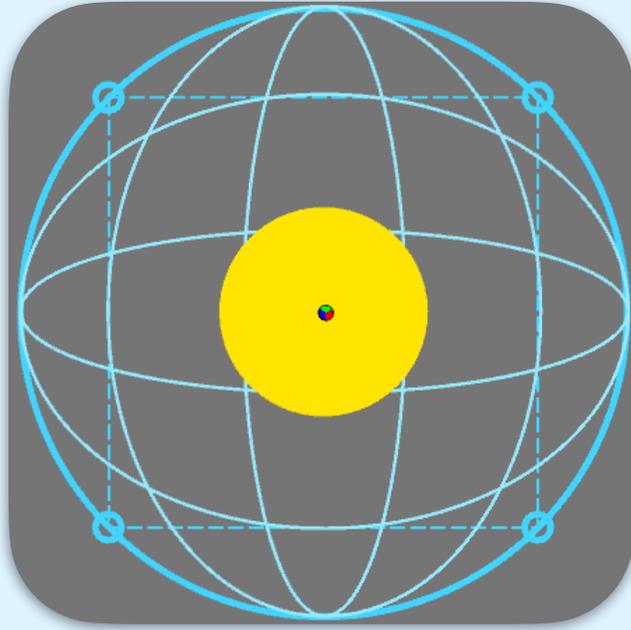
26. Select Expression/One for Scale

27. Select Expression/Zero for Rotation



28. Then clone the Center Peg twice and connect them as shown.

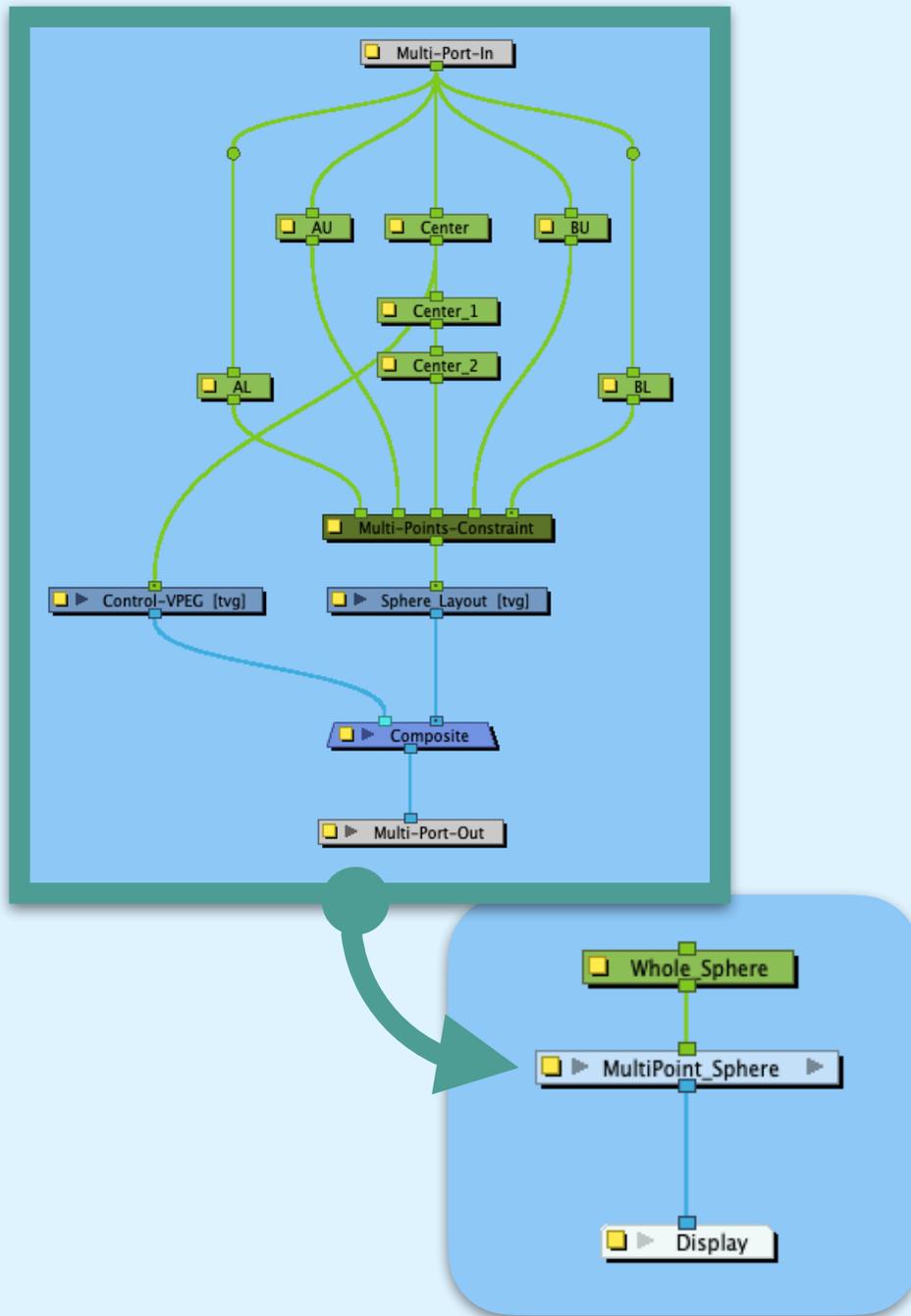
29. Now create another Drawing, label it Control-VPEG and connect from the top Center peg as shown.



30. Create a special colour for the Control.

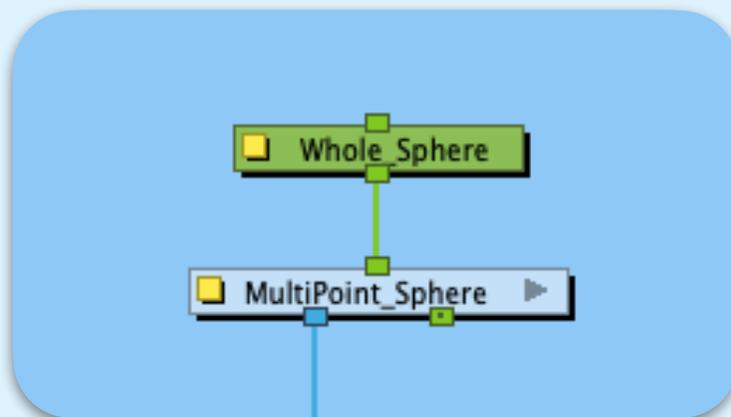
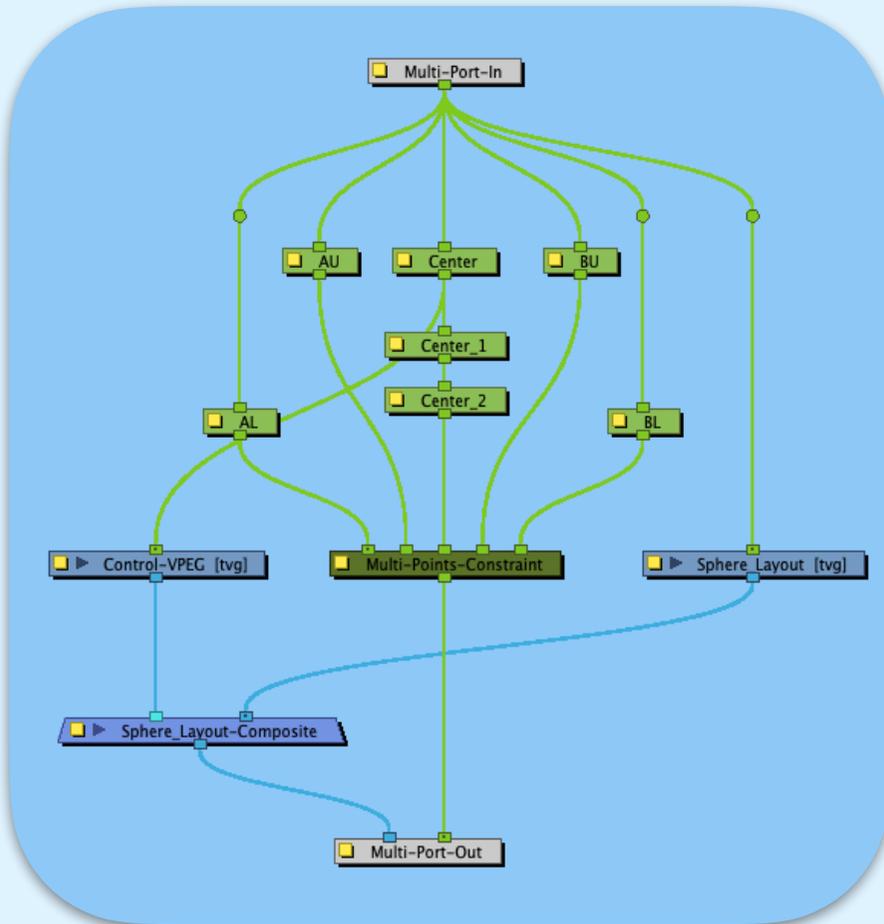
31. Now draw a circle within the Control-VPEG Drawing using the Layout as a guide to the size as shown.

32. And now reduce the Alpha of the Control colour to Zero to make it totally Transparent.



33. Select the nodes and group as shown. Hold on! We're not quite done yet!

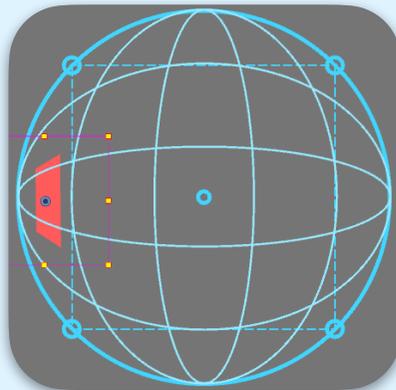
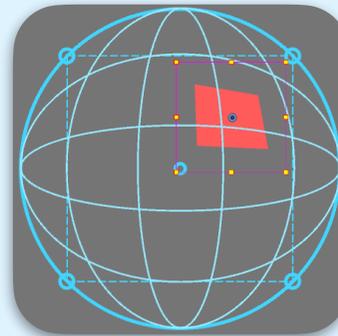
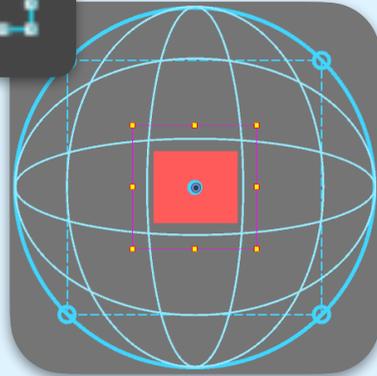
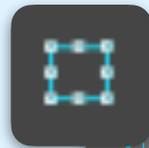
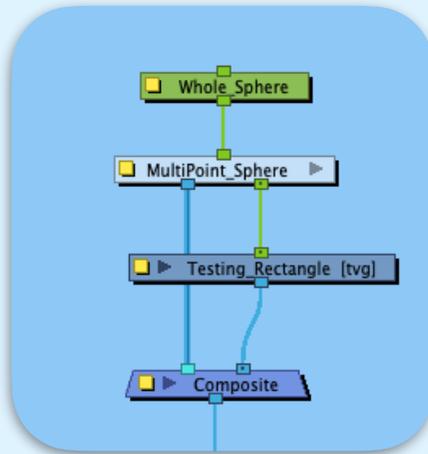
34. Go back into the Group!



35. Move the Sphere-Layout node as shown.

36. Re-label the Composite: 'Sphere_Layout-Composite'

Now to use it...



How to use it

Connect any drawing or group of drawings to the green output node as shown. The Blue output node connects to the composite of the drawing.

The Testing Rectangle (as shown here) is then selectable and can be moved around using the Transform tool in such a way as to appear rolling over the surface of a sphere.

You can remove the Sphere Layout when you're done making your model, or you can make a switch to turn it on and off using a Function Wizard.
Up to you!

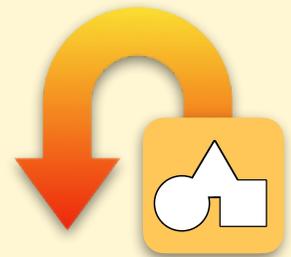


Z depth Sandwiches

Combining Shapes is something that happens in Harmony all the time and repeating yourself can get very tiresome and messy.

There are also times when creating large Composites of multiple body parts where the Colour and Line art need to be separated in Z by distances larger than normal to accommodate multiple body parts. A puppet with a very muscular arm is a case in point- The Shoulder, the Bicep, the Forearm as well as the hand... there may be 5 or 6 layers of Colour art combined together while all the Line art must be collected and pushed all the way to the back, so that no element looks as if it's resting on top of the others.

There are many variants to this easily copy & pasted recipes which produce markedly different results.





COMPOSITE

COMPOSITE

COMPOSITE

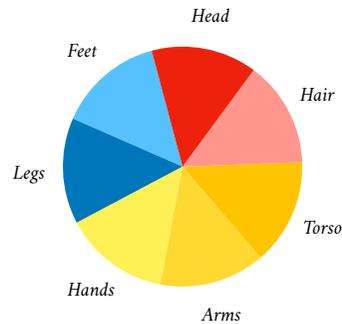
SITE

PEG
TRANSFORMATION

TRANSFORMATION

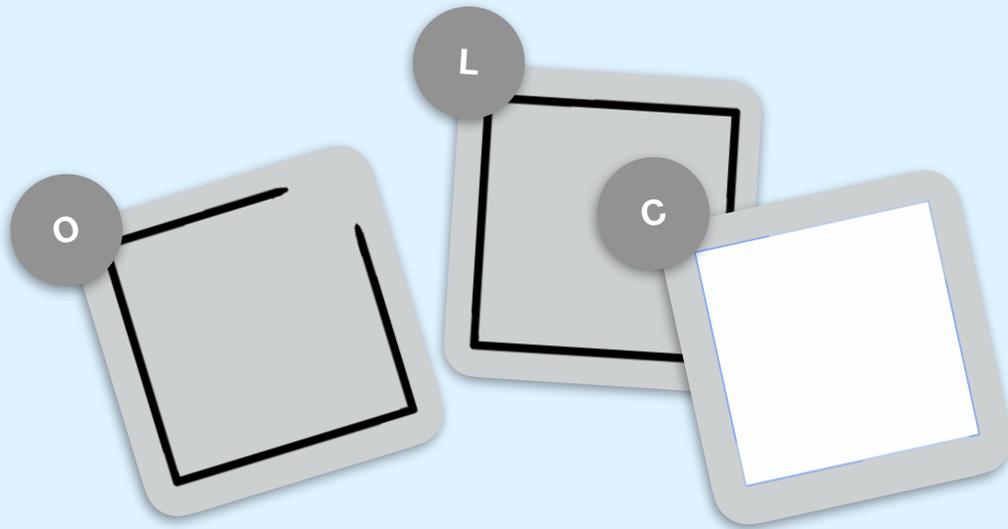
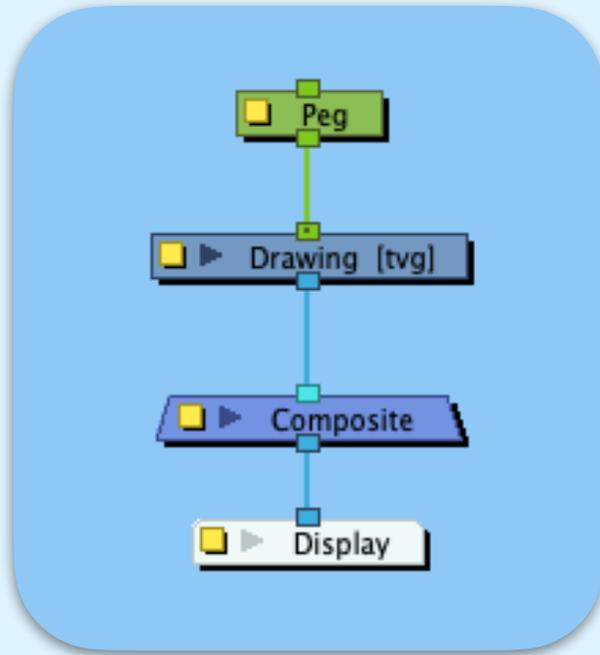
TRANSFORMATION

Z Depth Sandwiches



Ingredients

- Apply Peg Transformation
- Composite
- Peg and Drawing
- Line Art
- Pencil or Brush Tool
- Colour Art
- Static Transformation
- Overlay Art
- Cutter
- Increase Opacity



Z Depth Sandwiches

Method

Preparations

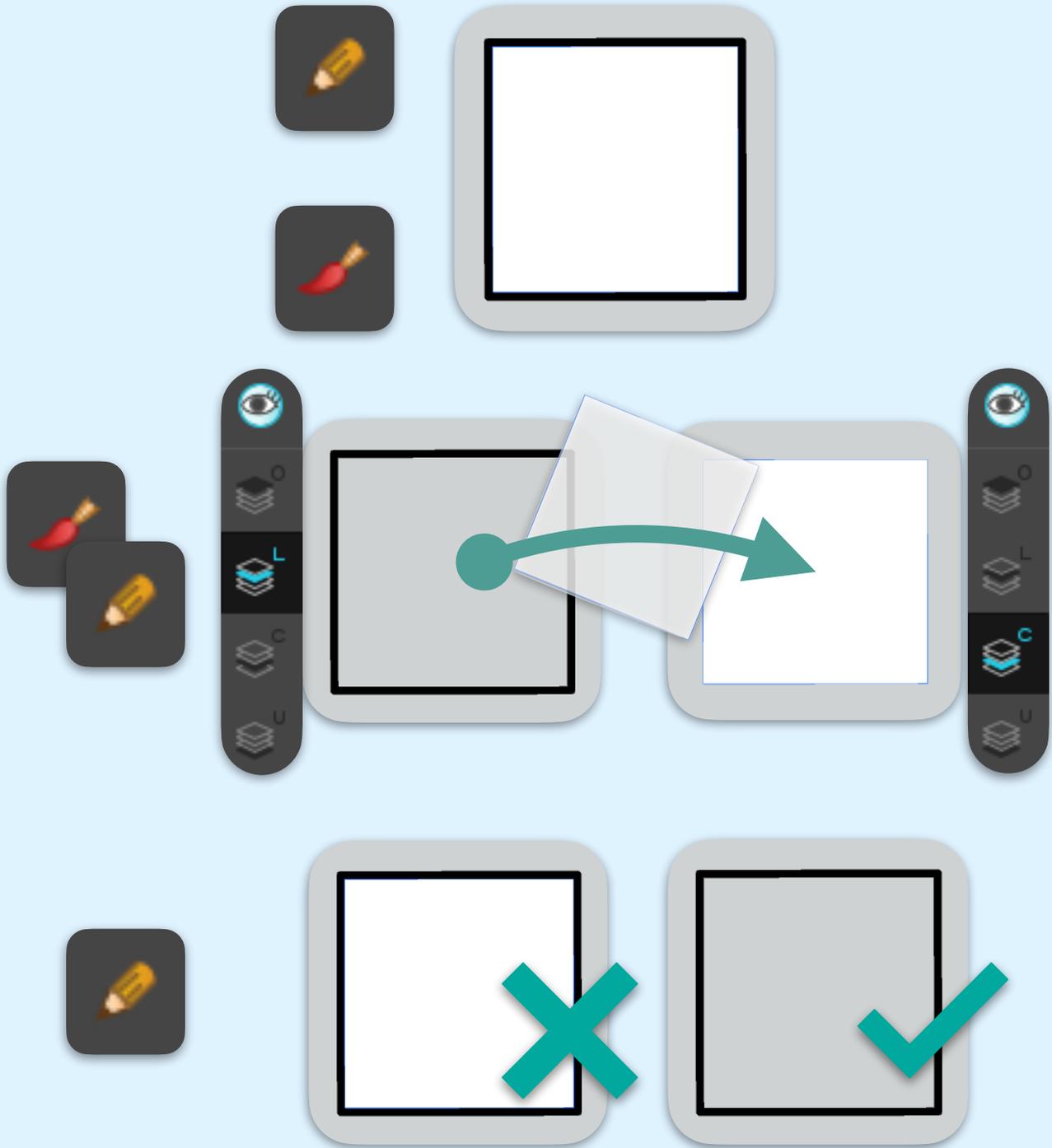
1. Make a standard Peg and Drawing setup.

For this example, we will create several different shapes with common elements:

***Overlay-art sub-layer-** Same as the Line art but with gaps*

***Line-art sub-layer-** Solid line*

***Colour-art sub-layer-** A fill that does not overlap the outline*



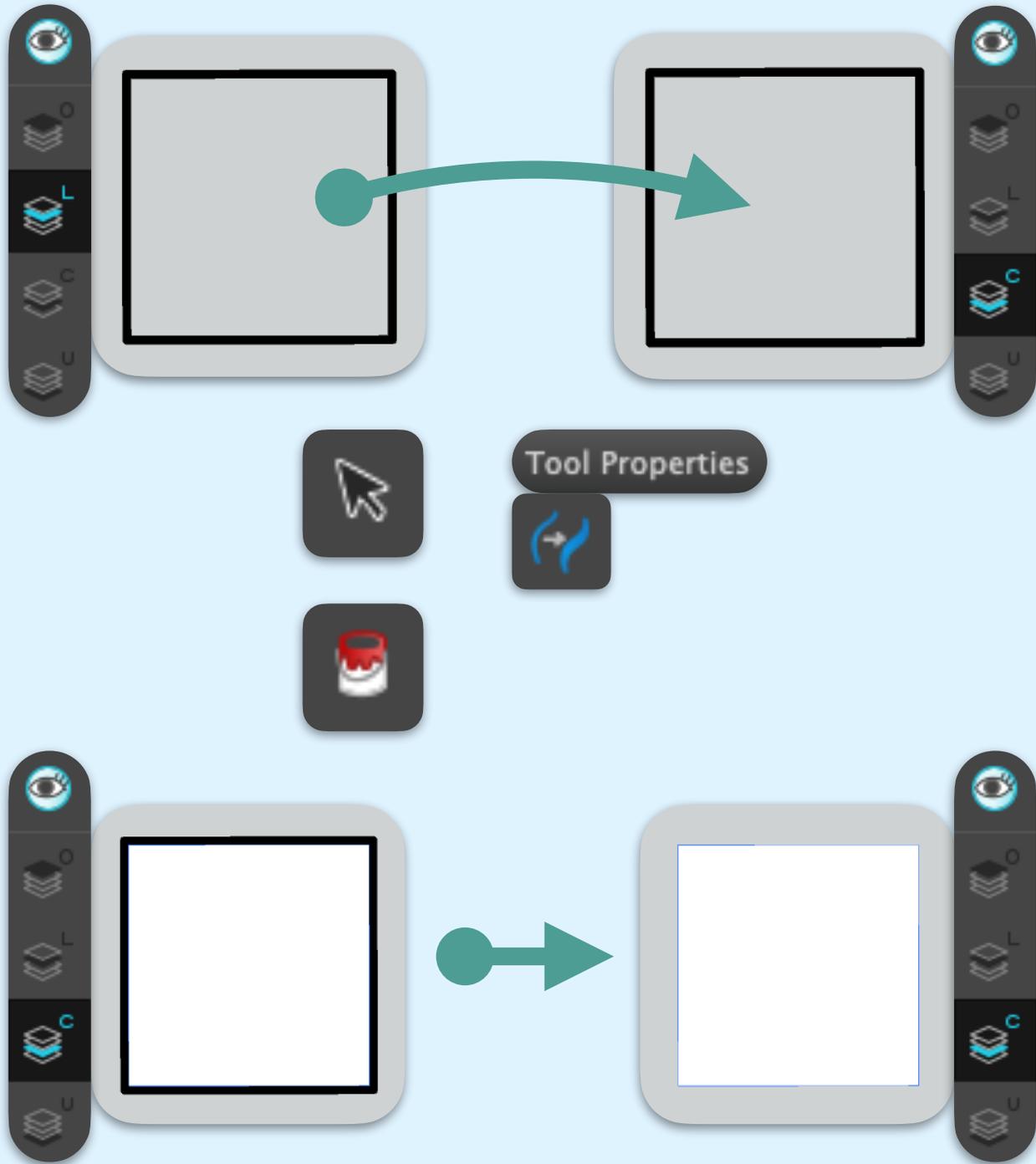
2. Draw your shape

There are two different things you now have to do depending on how you drew your shape...

3. For line-work created using the Brush tool or a textured Pencil tool, copy the fill from the Line Art sub-layer and just paste it into the Colour Art sub-layer. Then go to Step 9.

If your Brush or Pencil line work have pronounced textures, read the other methods of sandwiching which are shown at the end of this recipe.

4. For untextured line-work created using the Pencil tool, make sure the fill has not yet been created at this stage. *(If you have already filled the shape, please delete the fill.)*



5. Copy the line work from the Line Art sub-layer and paste it into the Colour Art sub-layer

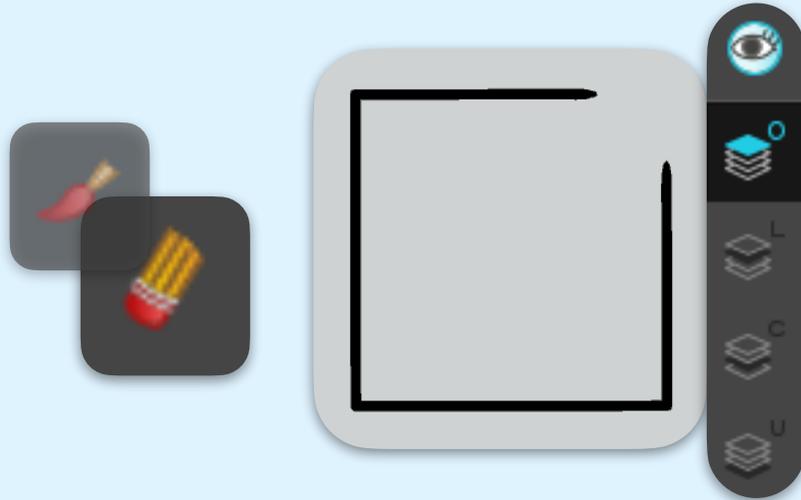
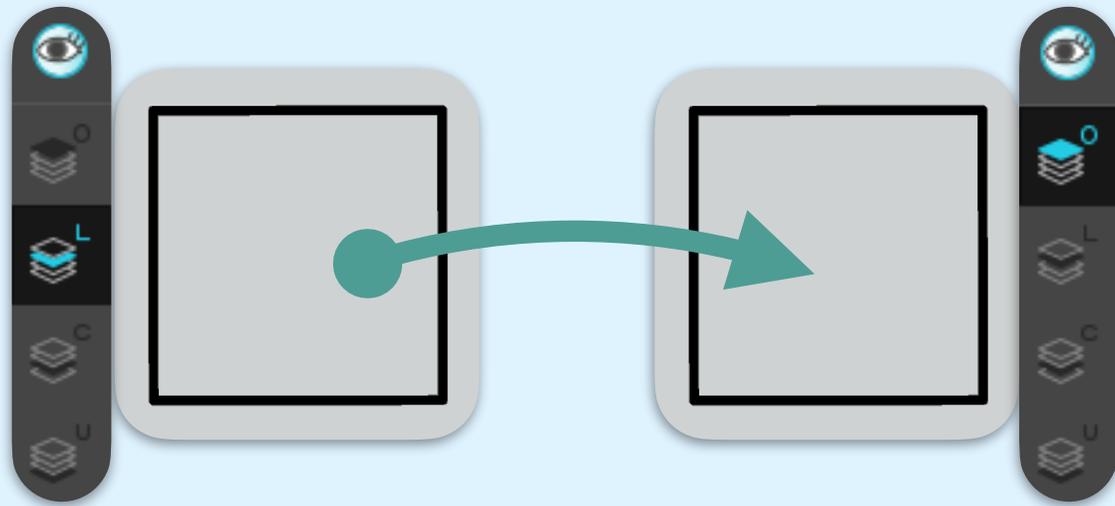
6. Make sure the Colour Art's line is selected, then hit the 'Pencil to Brush' button in the Select Tool's Properties window.

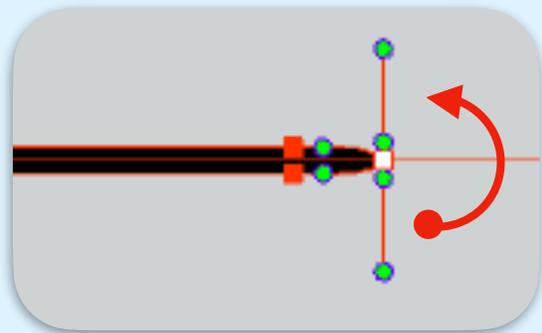
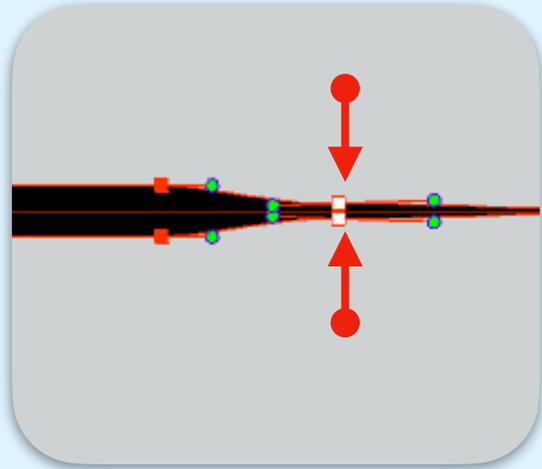
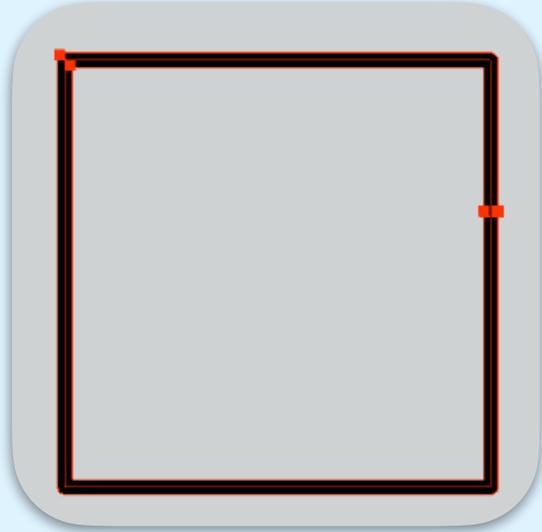
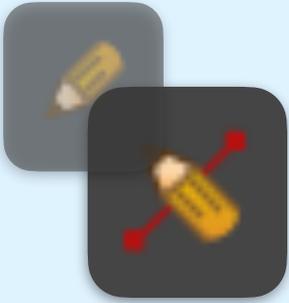
This makes the pencil lines into shapes of their own.

7. Now you can fill the shape in the Colour Art layer.

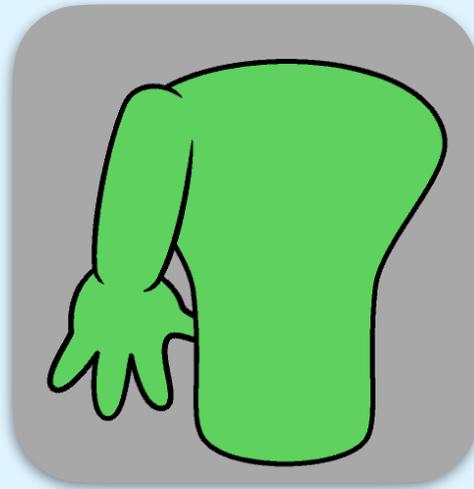
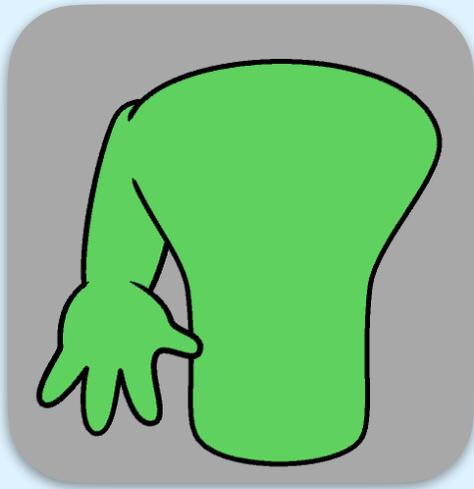
8. Finally select and delete the 'Pencil To Brush' created outline shape so that only the fill remains.

(In other words, get rid of the 'Black outline' in the Colour Art Sub-Layer)

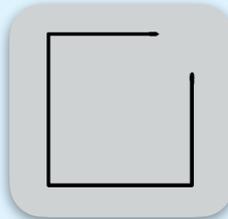
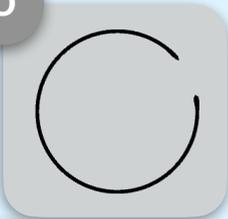




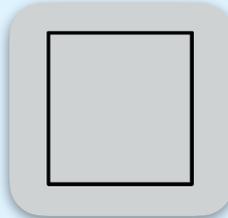
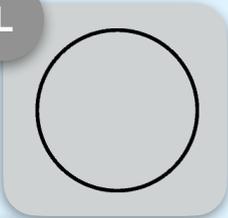
11. If you have drawn the line with the Pencil tool, you can use the Pencil Editor tool to ‘nip’ the line into pieces without destroying the line work:
12. Press Ctrl (Windows/Linux) or ⌘ (macOS) and click the red line to add extra points.
13. Then hold Shift and drag a point to slide both points into the centre.
14. Finally (while holding Shift), tilt the handles towards each other to create a ‘nipped’ line. As shown.



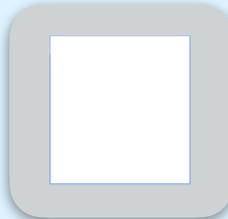
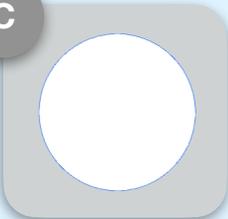
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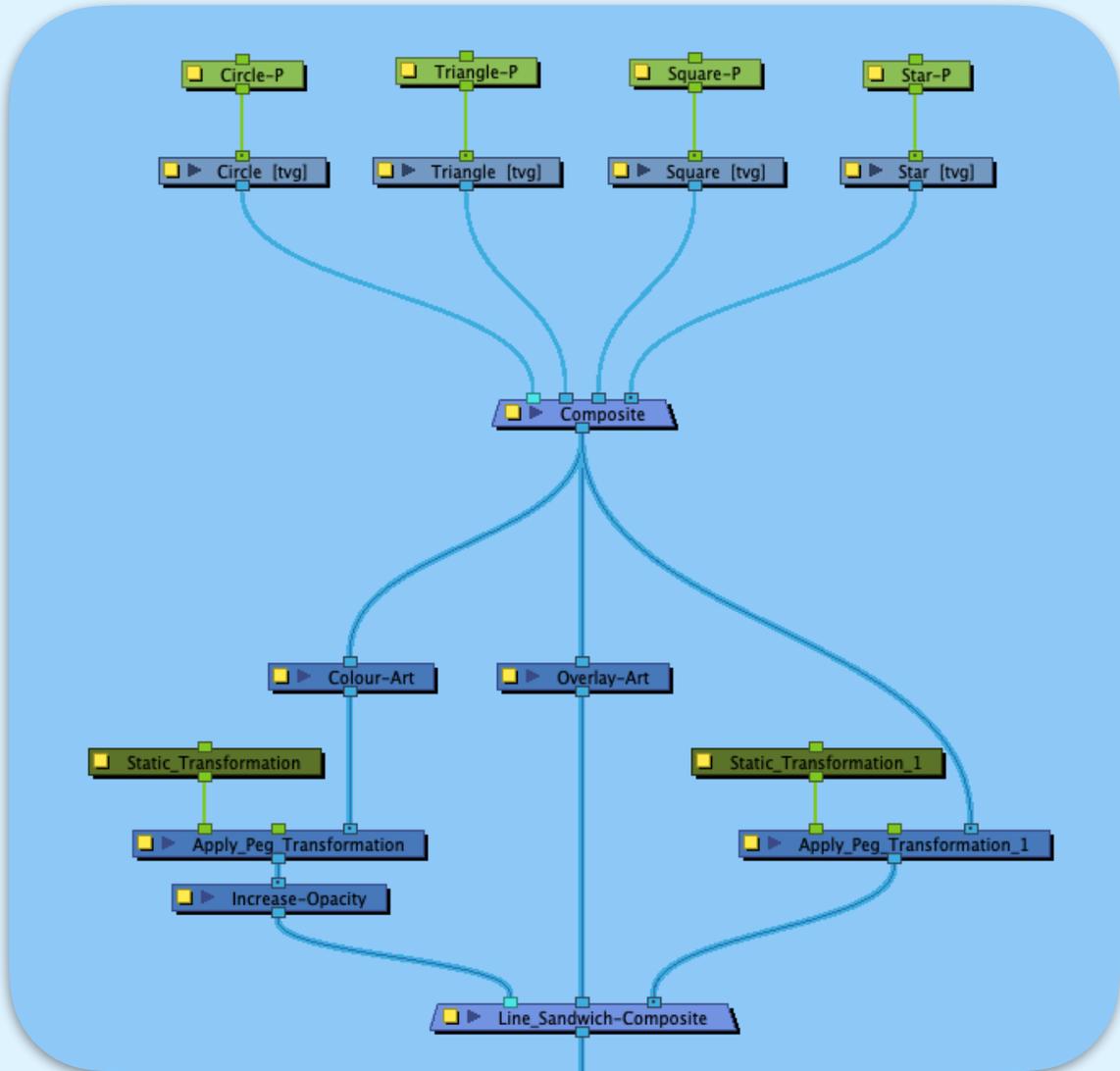


This removed section of line will eventually allow the shape to look as if it is 'joined' to the other shapes, like an arm attached to a body. See the example images

15. Create several other shapes in the same way.

Once this is done, you can now create your Sandwich recipe!

You have 3 choices:



Line Sandwich

16. Get the following nodes: Colour-Art, Overlay-Art, Apply Peg Transformation x2, Static Transformation x2, Increase Opacity, Pass through Composite and either another Pass through Composite or Bitmap Composite.

17. Arrange them all as shown.

18. Next, label the nodes as shown.

Forward

Active	<input checked="" type="checkbox"/>
(x) Axis	0
(y) Axis	0
(z) Axis	0.002

Back

Active	<input checked="" type="checkbox"/>
(x) Axis	0
(y) Axis	0
(z) Axis	-0.005

Increase Opacity

Factor 2

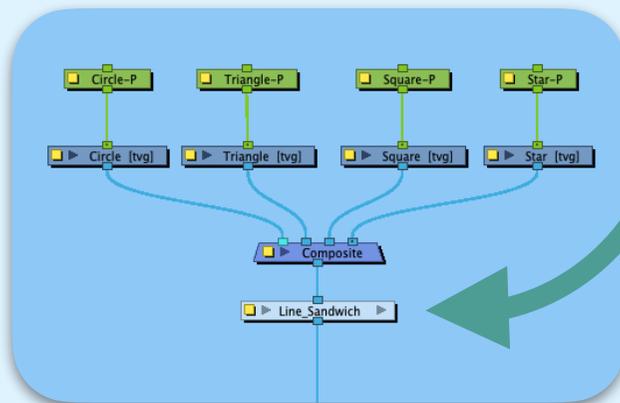
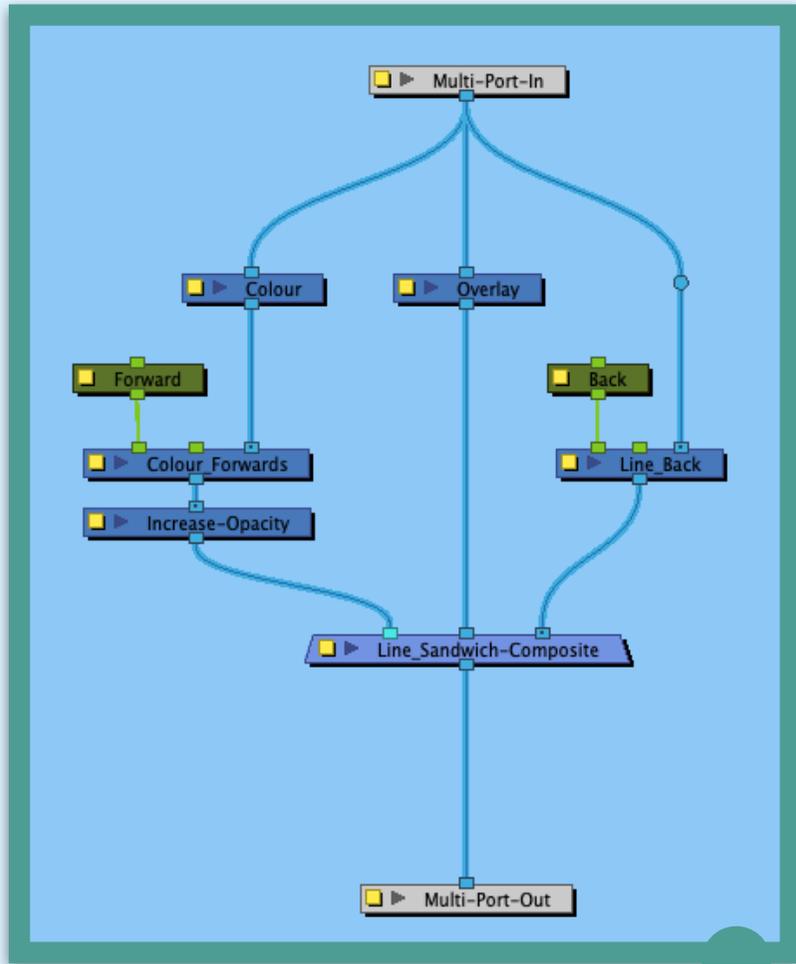
19. Now in the Forward node, go into its properties and check the 'Active' box.

20. Set the (z) Axis to 0.002 and hit close.

21. In the Back node, go into its properties and check the 'Active' box.

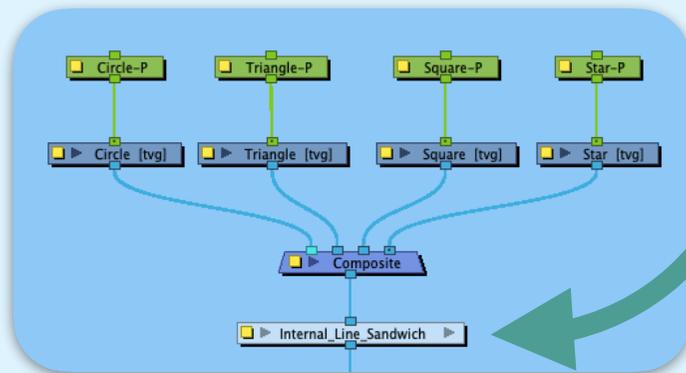
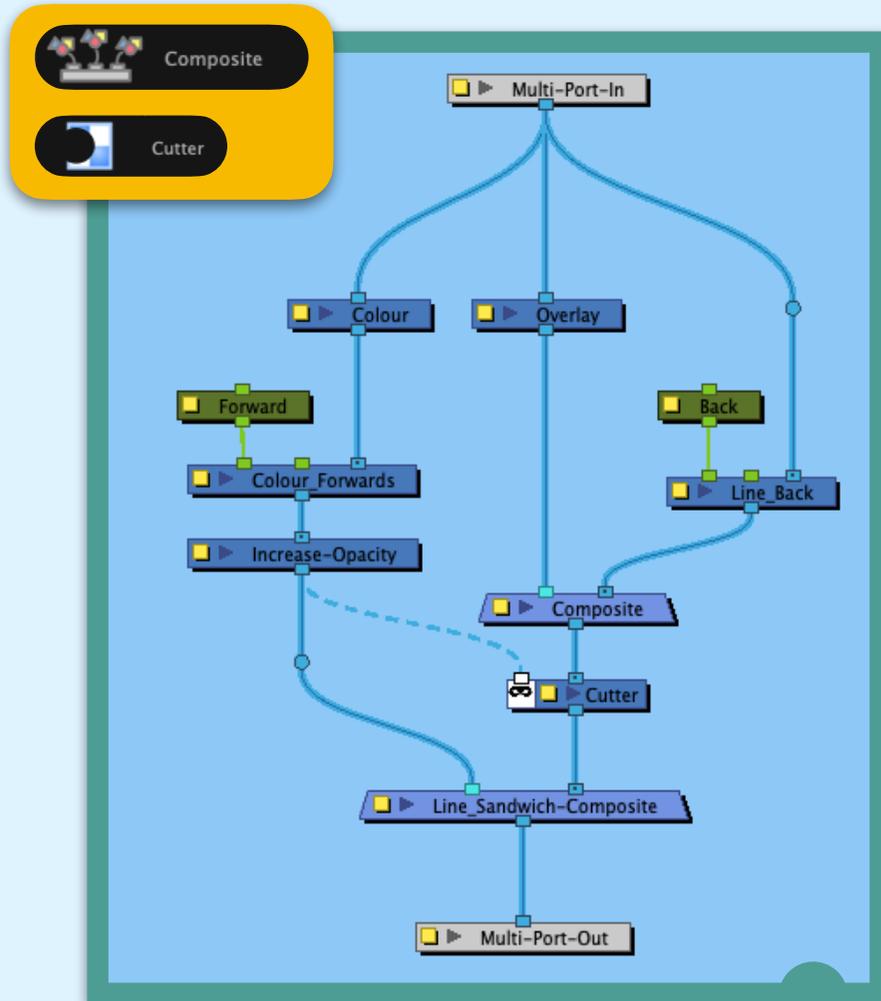
22. Set the (z) Axis to -0.005 and hit close.

23. Set the Increase-Opacity Factor to 2 in its properties. This may be altered to taste.



24. Group all the nodes together and label it: 'Line_Sandwich'

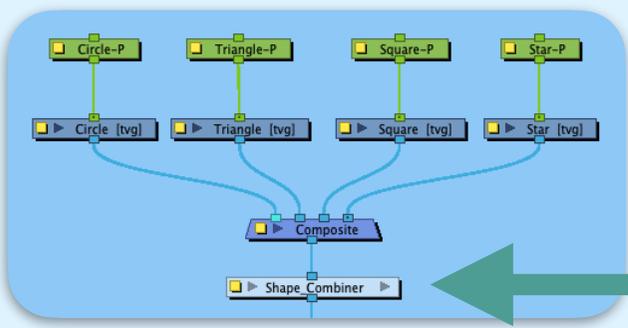
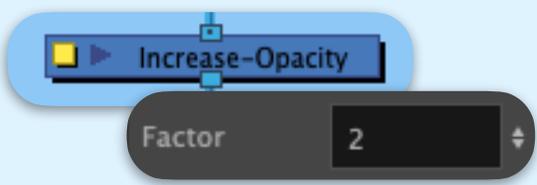
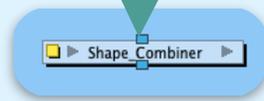
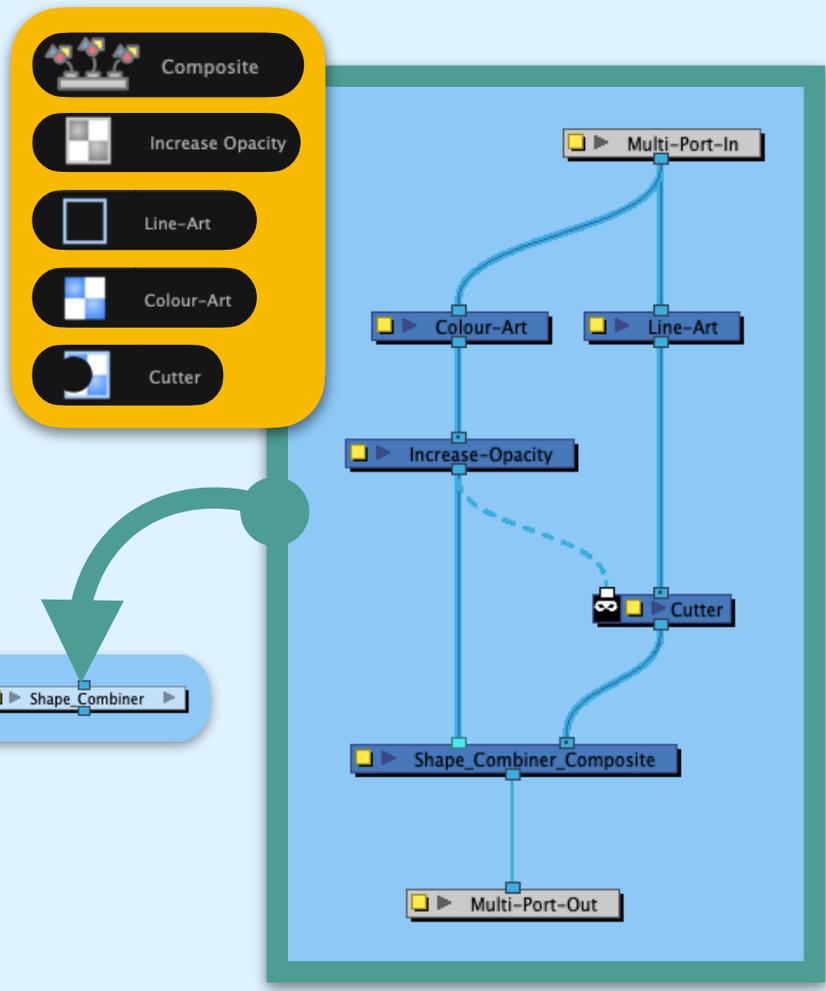
25. Finally attach a Pass Through Composite on top of the Group as shown.



Internal Line Sandwich

26. Same as the previous Sandwich node with a Cutter & Composite- as shown

27. Label the Group 'Internal_Line_Sandwich'



Shape Combiner Sandwich

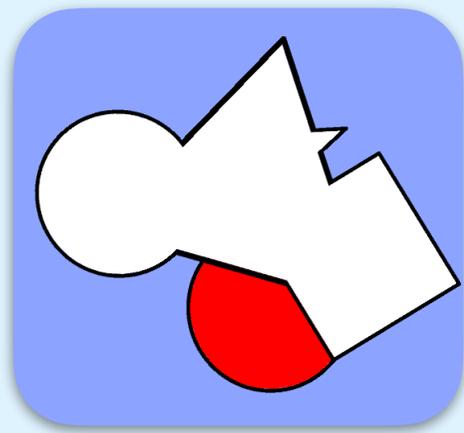
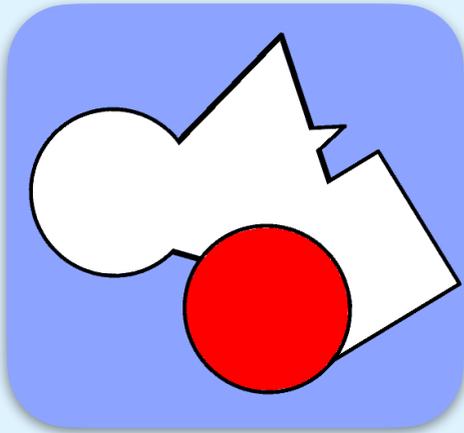
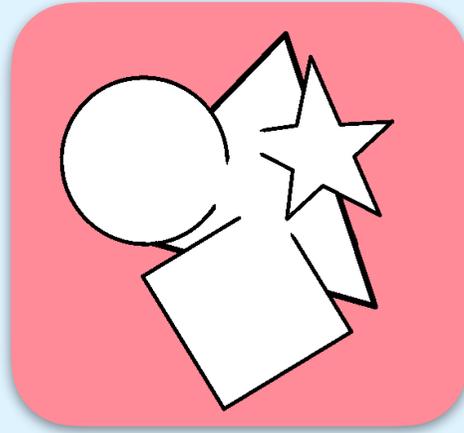
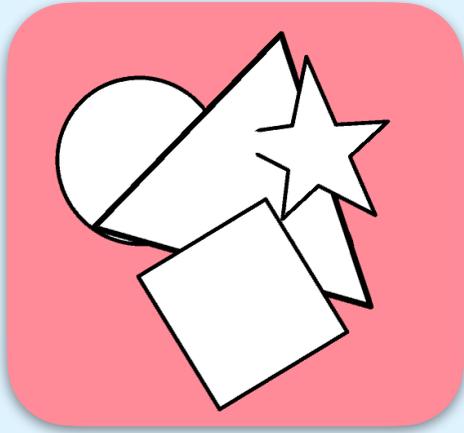
- A. Get the following nodes: Colour-Art, Line Art, Increase Opacity, Cutter and Bitmap Composite.

- B. Group all the nodes and label the Group 'Shape_Combiner'

- C. Arrange all the nodes as shown

- D. Set the Increase-Opacity Factor to 2 in its properties. This may be altered to taste.

- E. Finally Attach a Pass Through Composite above the group as shown.

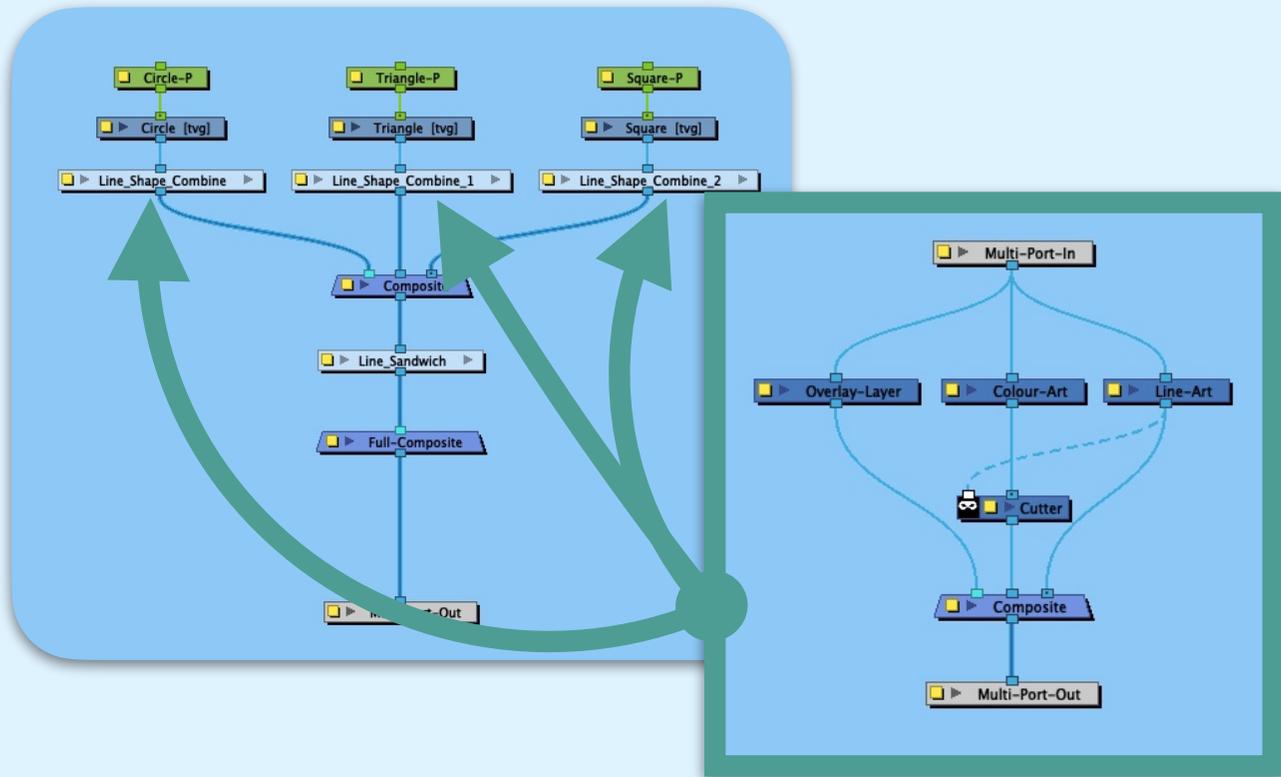
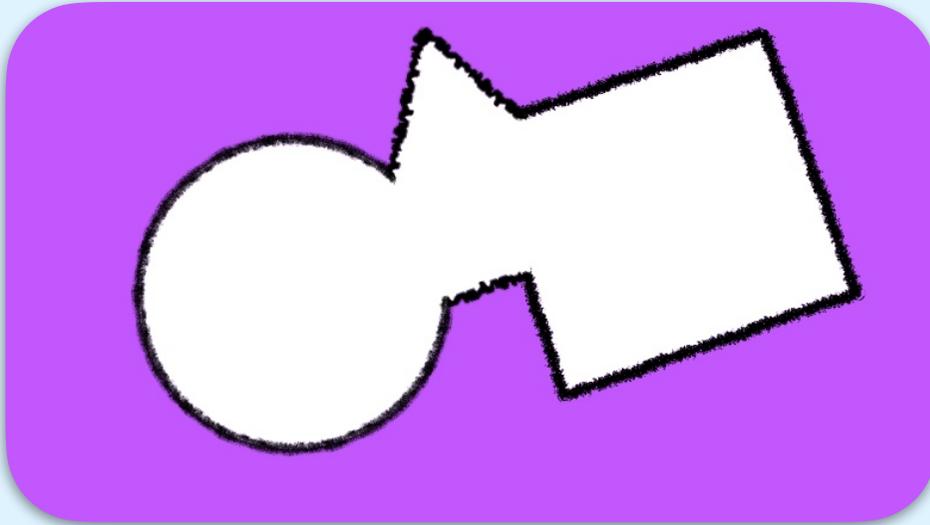


Organising the Drawings

The Line sandwich is the most conventional. It allows all the drawings to have the optimal amount of room to z-shuffle in and gives you the most options regarding how they can appear to interact with each other

The Internal Lines sandwich is exactly the same, only there is no outline for the overall shape. The only lines that can appear are within the colour art fills, which may be good for characters with no outlines. The downside of this however, is that when lines are severed by the fills, unless they are gaps manually erased on the Overlay layer, they are always sharp cuts.

The Shape Combiner Sandwich is quite a natty simple little idea where you can combine as many shapes as you like to easily produce one flat shape. No matter how far you move any of the drawings towards or away from each other, the Line art will NEVER protrude the Colour art, and elements that are *not joined onto it's input composite* (As shown by the red circle) can be shuffled in front and behind the Sandwich quickly and easily.

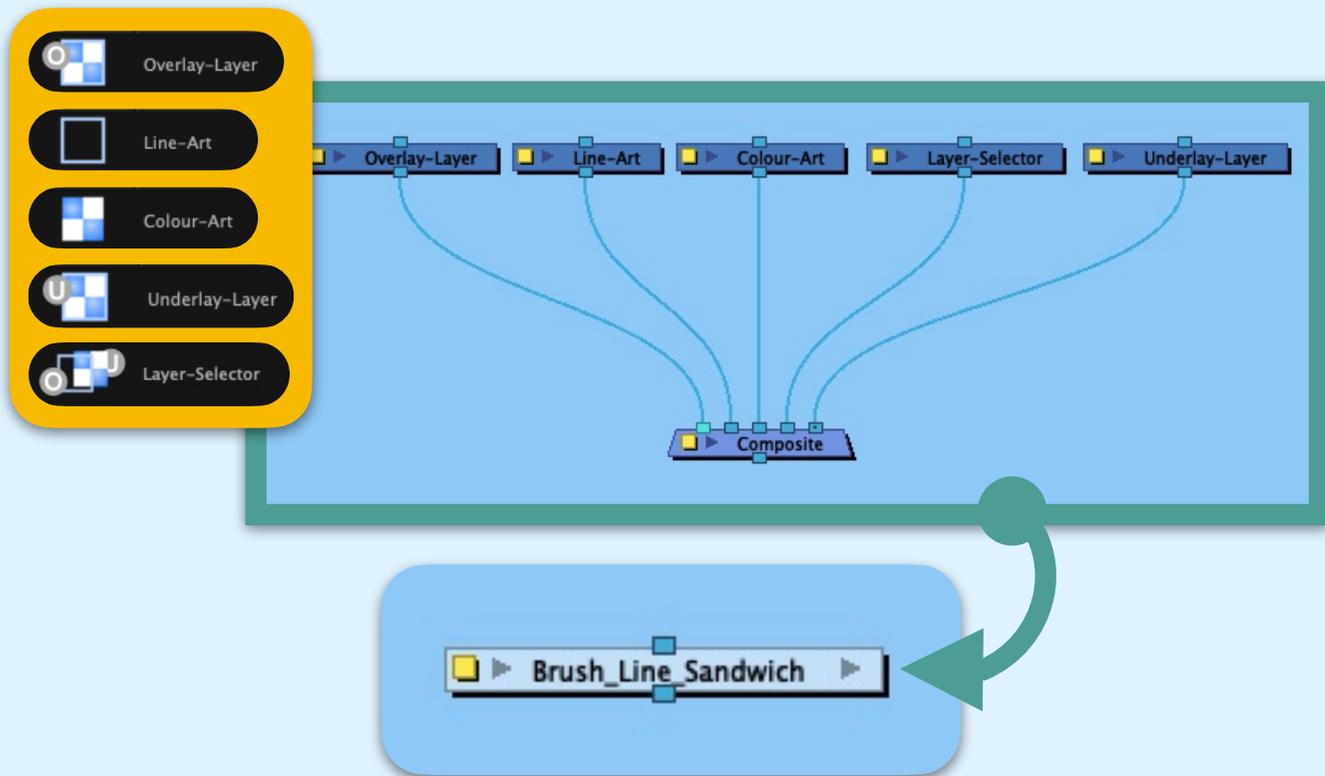
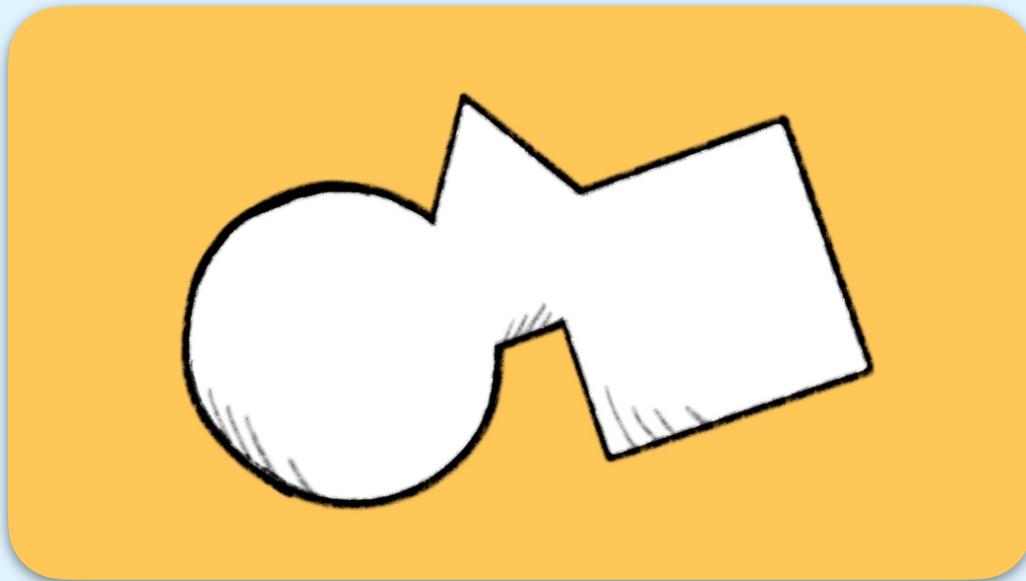


Textured Pencil Lines

Textured Pencil lines bring a few problems to the table, so just using the Sandwich alone will not work with Pencil textures.

For Textured lines you must NOT trim the colour art layer. Instead, steps 1, 2 & 3 are all that are required.

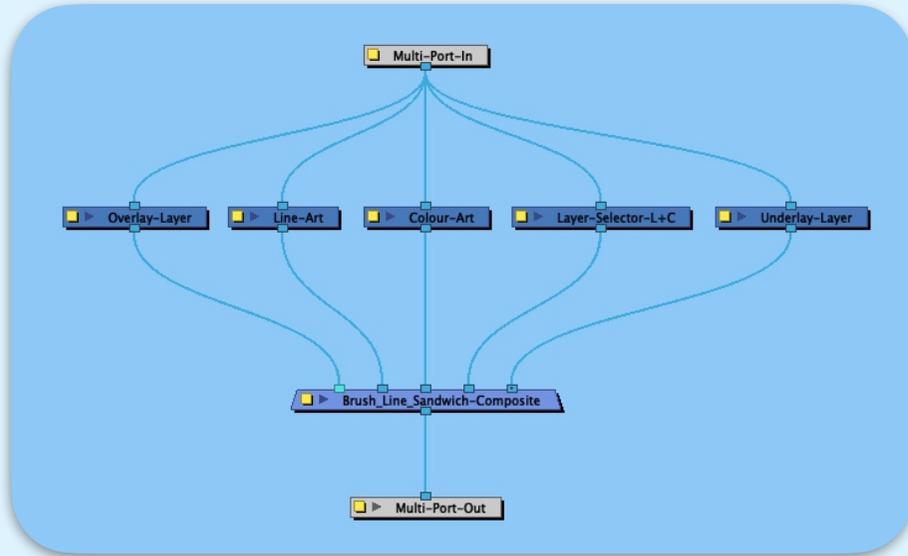
You'll need to plug another group of nodes comprising of a Cutter, an Overlay, Colour and Line art as shown into each piece of artwork as shown in order to make it work.



Textured Brush Lines

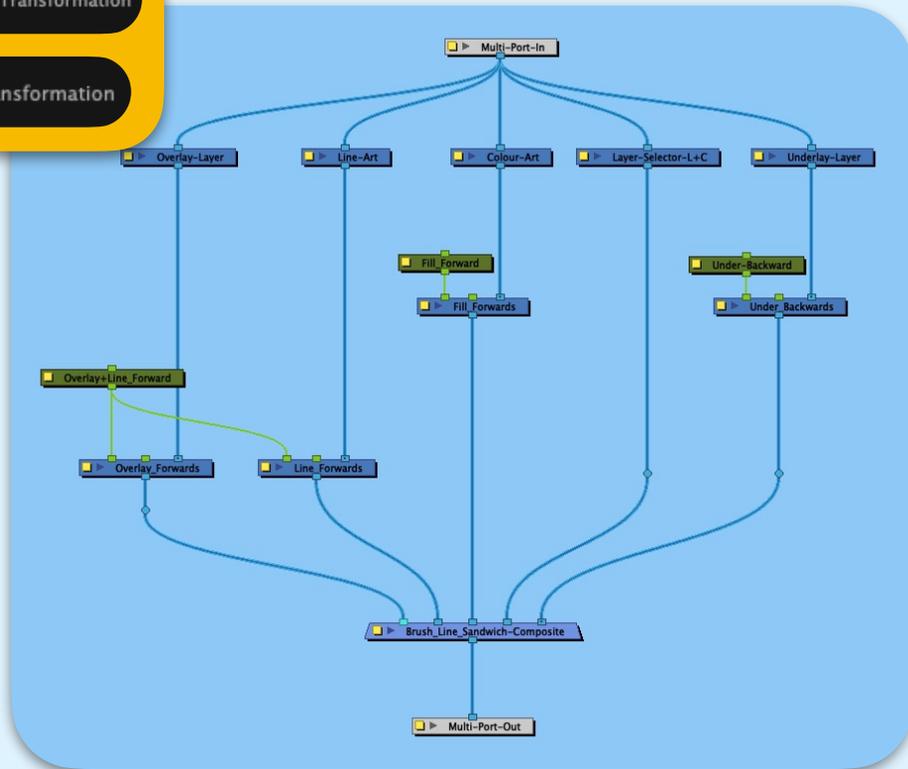
Textured Brush lines are by far the most fiddly to deal with, but I'm happy to say that they too can be tamed- they just need a bit more attention.

1. Get Overlay, Line, Colour, Underlay & Layer-Selector art nodes and arrange them as shown.
2. Select the whole thing and group it.
3. Label it Brush Line Sandwich



Apply-Peg-Transformation

Static Transformation



4. Go back into the Group.
5. Alter the Layer Selector's name to Layer-Selector-L+C
6. Change the Composite's name to 'Brush Line Sandwich-Composite'

7. Get 4 'Apply Peg Transformations' & 3 'Static Transformations'
8. Couple everything together and label all the nodes as shown.

Overlay+Line_Forward

Active	<input checked="" type="checkbox"/>
(x) Axis	0
(y) Axis	0
(z) Axis	0.001

Fill_Forward

Active	<input checked="" type="checkbox"/>
(x) Axis	0
(y) Axis	0
(z) Axis	0.001

Under-Backward

Active	<input checked="" type="checkbox"/>
(x) Axis	0
(y) Axis	0
(z) Axis	-0.01

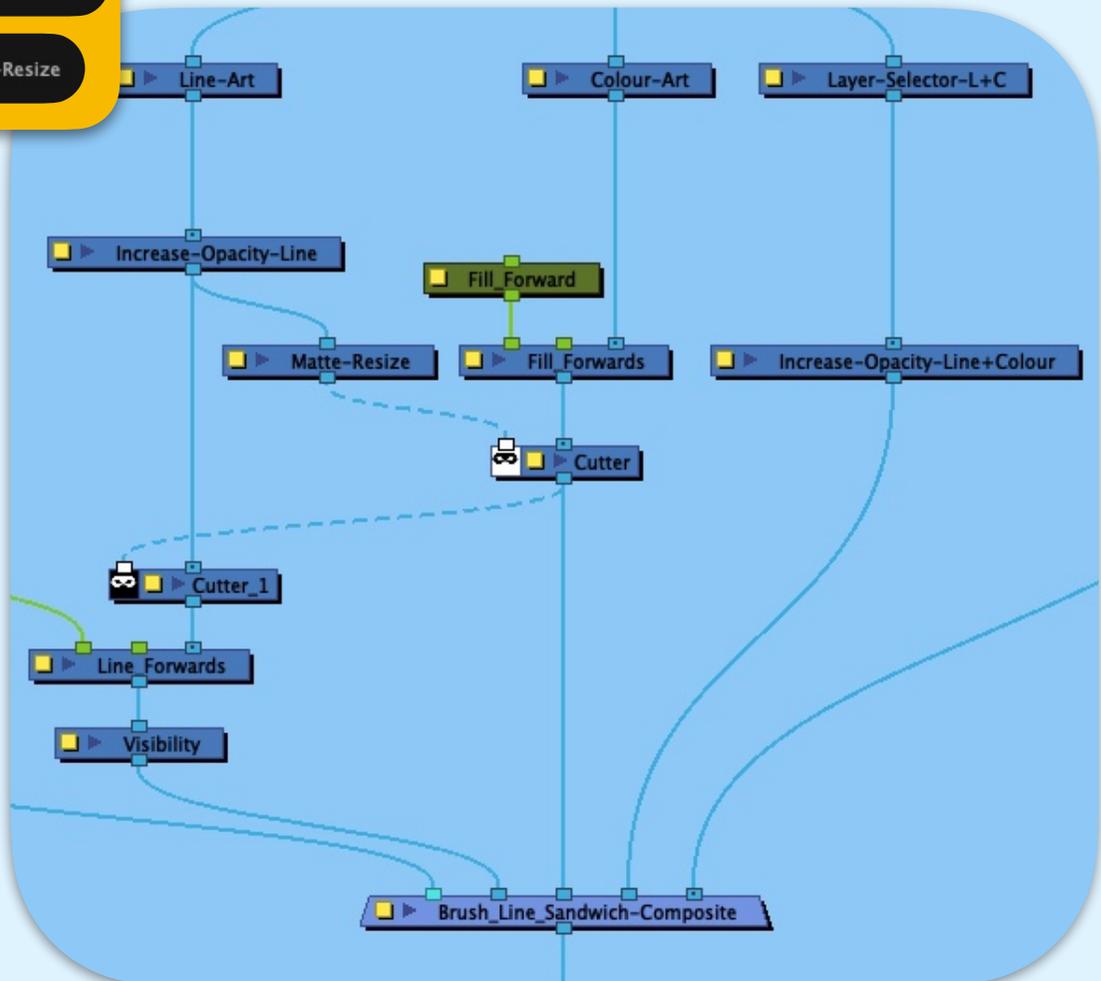
9. Change the settings of each Static Transformation as shown.

Cutter

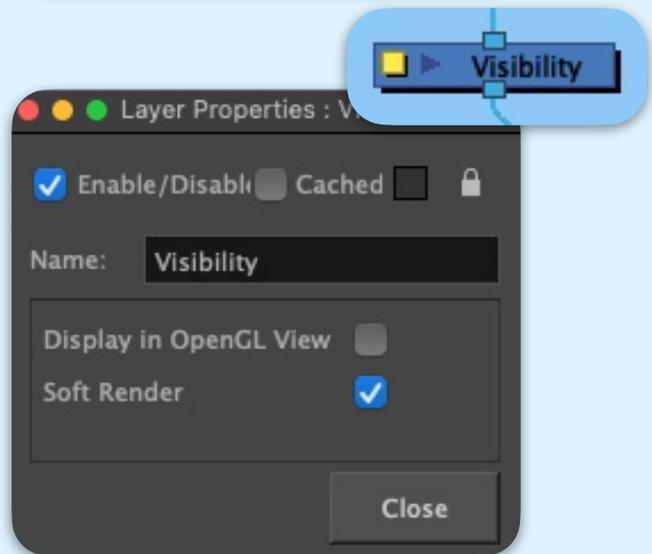
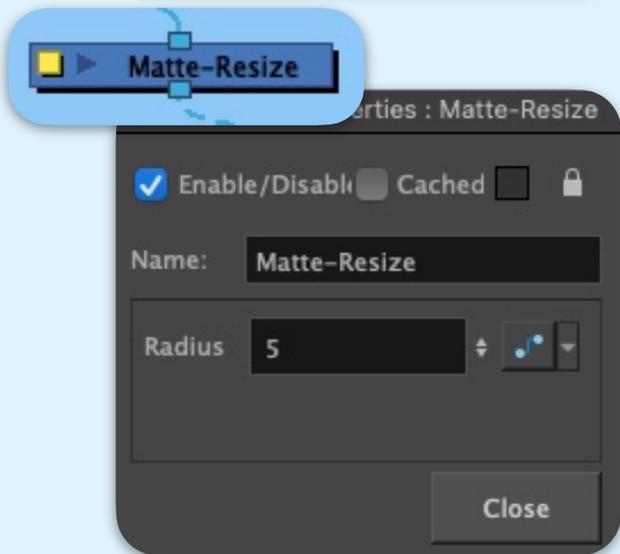
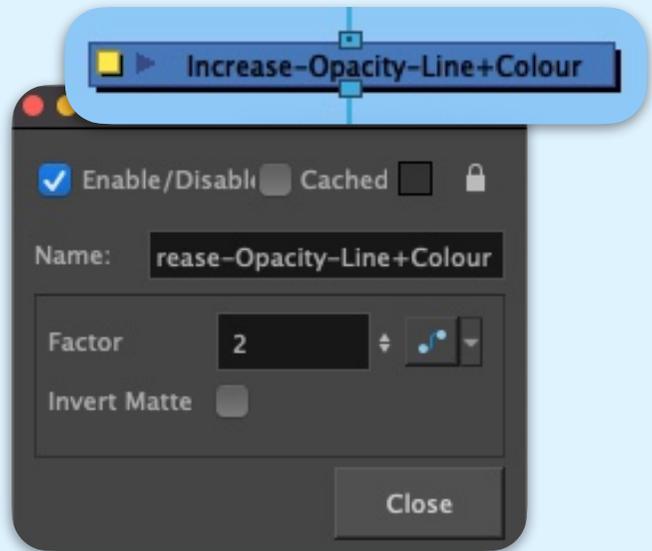
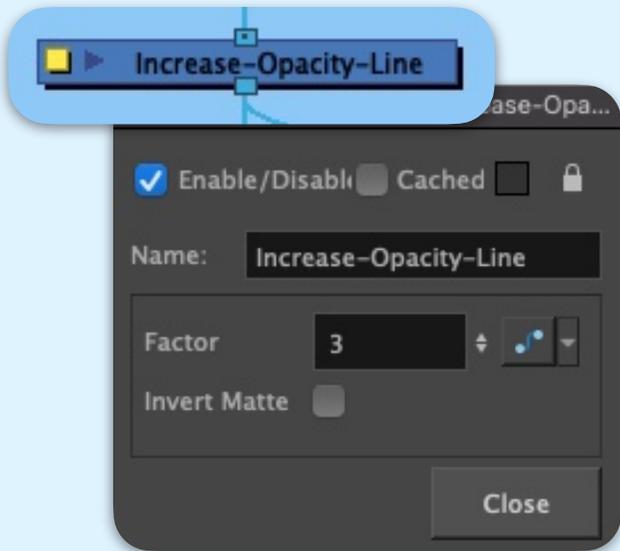
Visibility

Increase Opacity

Matte-Resize



10. Get 2 Cutters, 2 Increase Opacity nodes, a Matte Resize and a Visibility node, couple them all up and label them as shown.



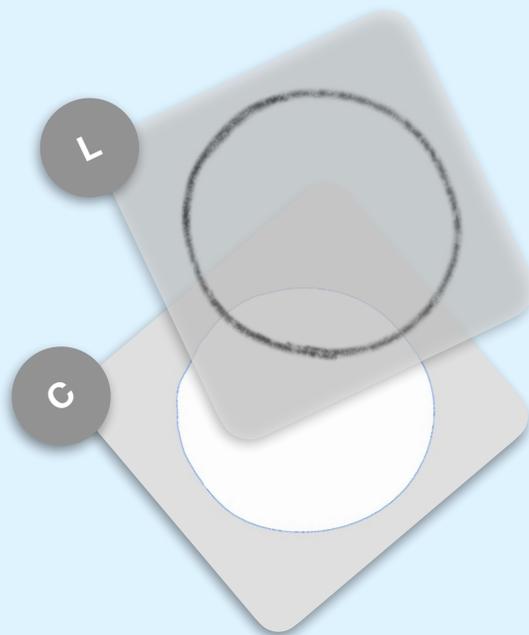
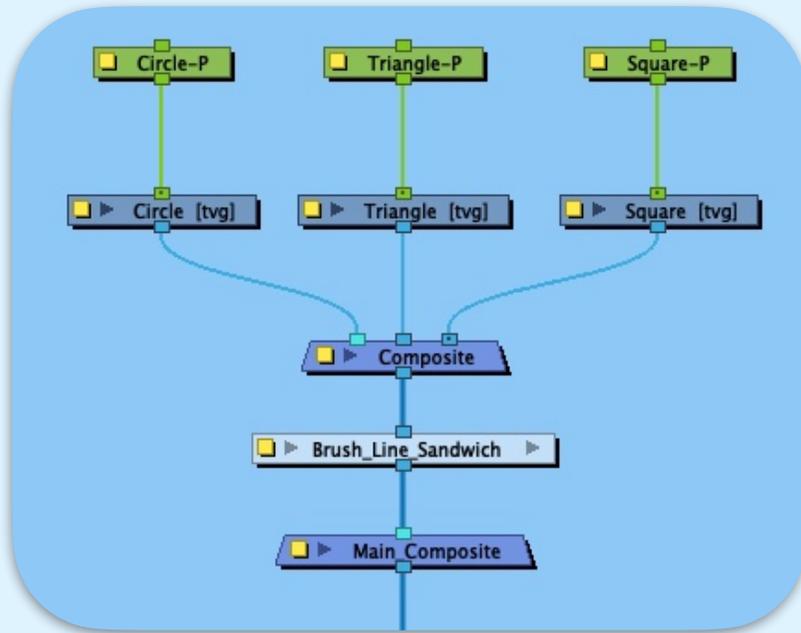
11. Change the Increase Opacity-Line's properties to 3

12. Change the Increase Opacity-Line+Colour's properties to

13. Change the Matte Resize's properties to 5

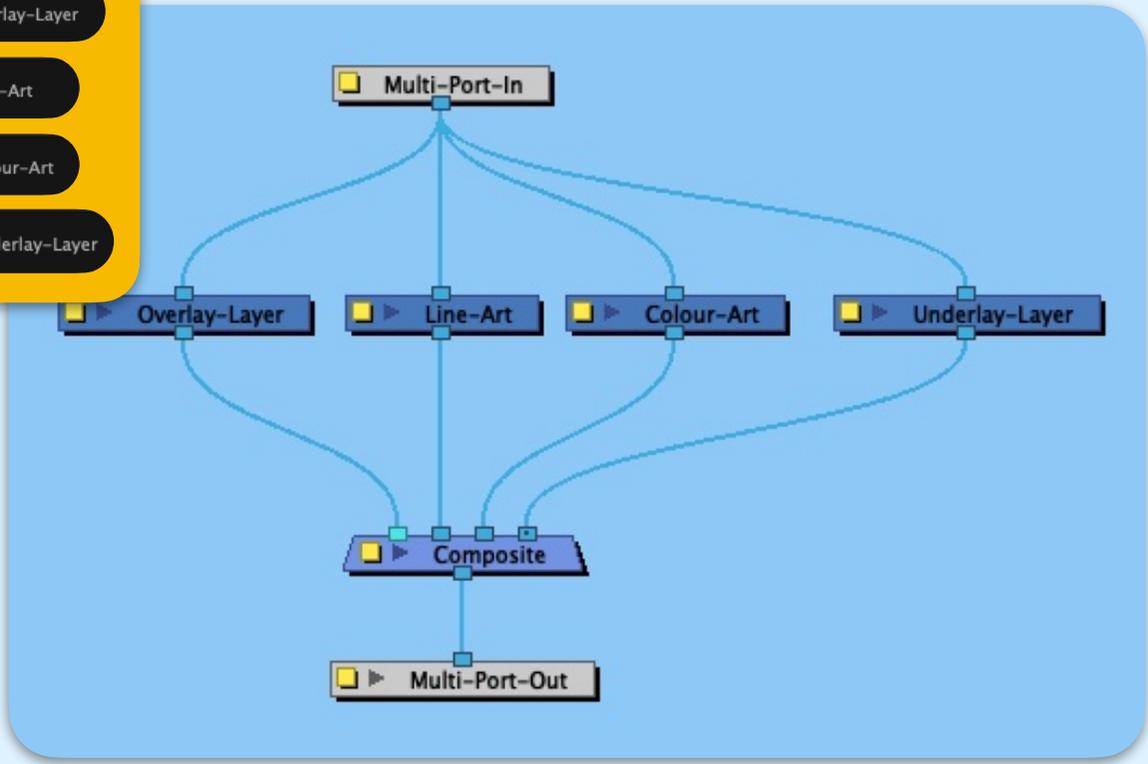
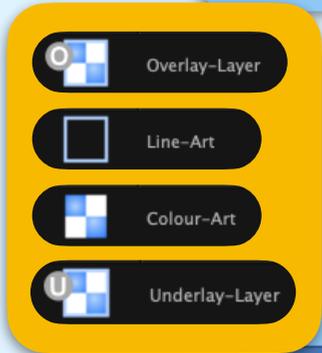
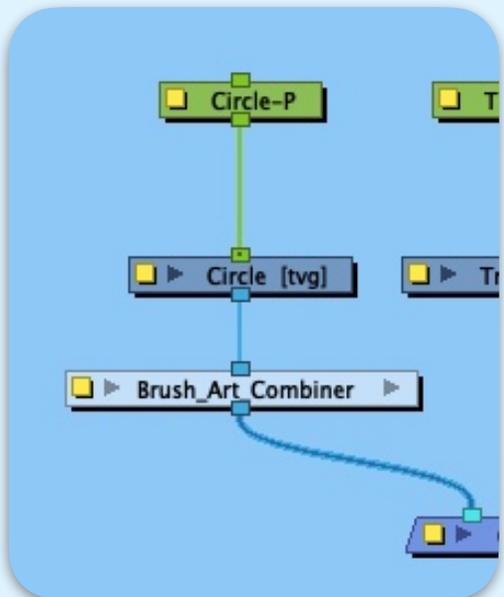
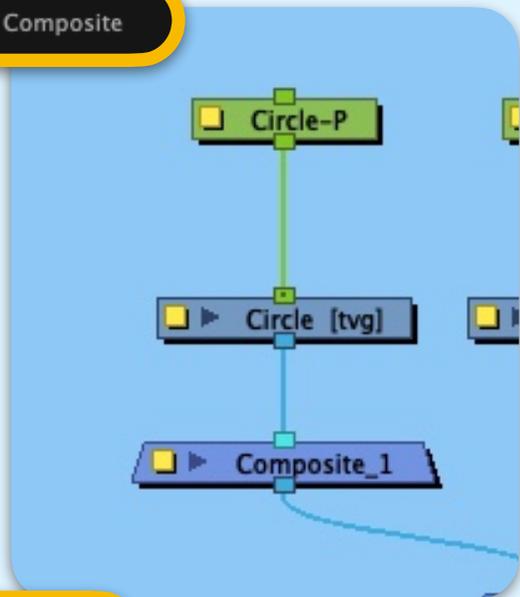
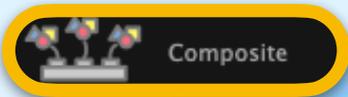
14. In the Visibility node, uncheck Display in OpenGL View

This will stop all the cutters from potentially slowing the system down while you work. It's not absolutely necessary.

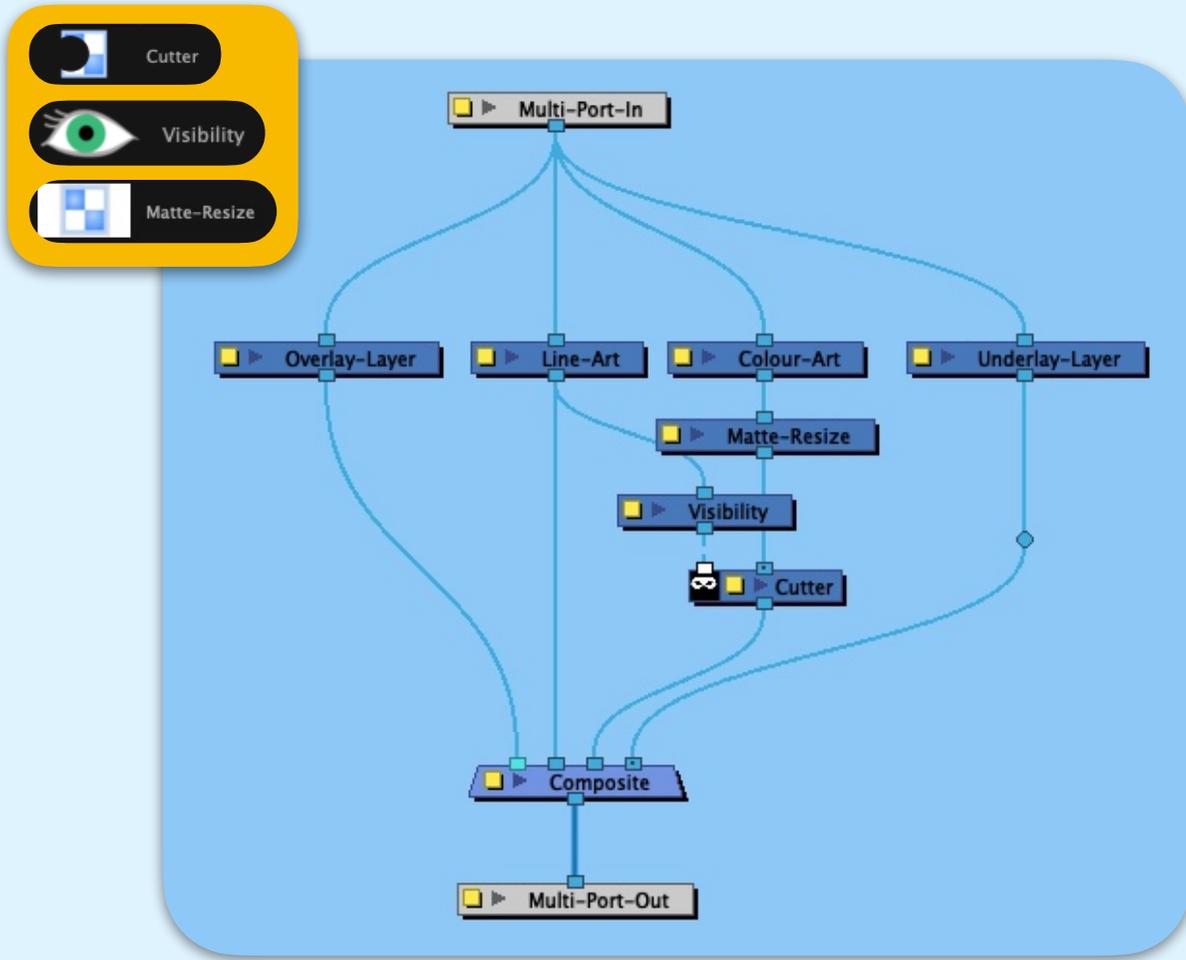


15. Plug the Brush Line Sandwich into your drawing setup as shown.

16. Now make sure that for each element, the Brush line work is in the Line-Art Sublayer and the fills are in the ColourArt Sublayer



17. Add a Composite to one of the element's outputs.
18. Group the Composite and rename the group 'Brush Art Combiner'
19. Get an Overlay, Line, Colour & Underlay Art node and arrange them as shown.



Layer Properties : Matte-Resize

Enable/Disable Cached Lock

Name:

Radius: 

Close

Layer Properties : Visibility

Enable/Disable Cached Lock

Name:

Display in OpenGL View

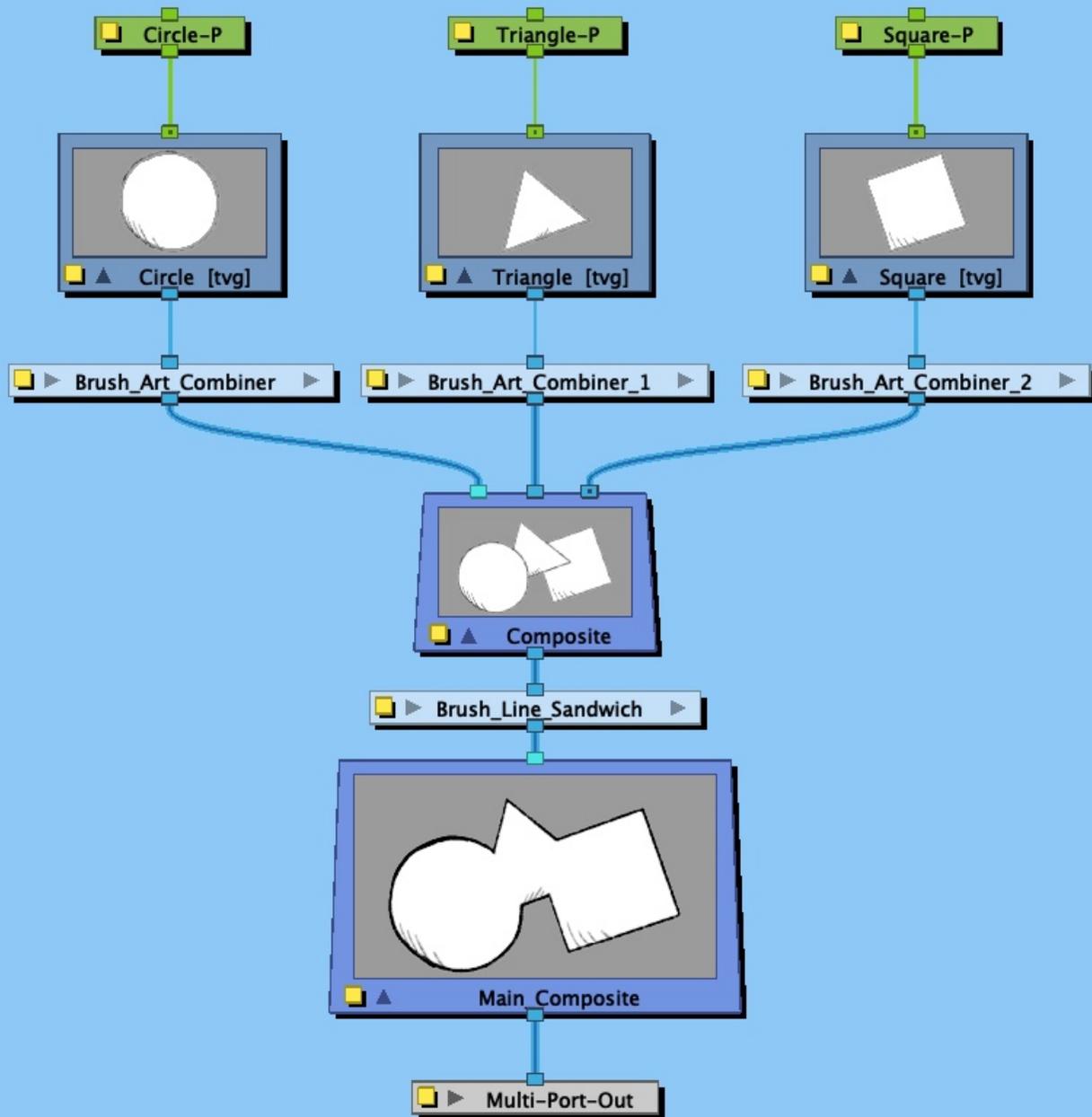
Soft Render

Close

20. Get a Matte Resize, Visibility & Cutter node and arrange them as shown.

21. In the Matte Resize properties, set the Radius to 5

22. In the Visibility node, uncheck Display in OpenGL View



23. Finally, come out of the group, duplicate the 'Brush_Art_Combiner' and couple them to each drawing you want to 'attach together'

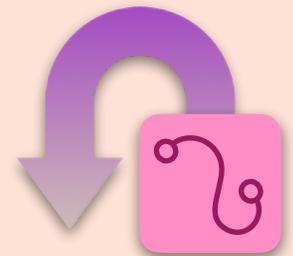


Semi Rigged Clean Up

This one isn't so much a recipe as a modus operandi for those who want to clean up animation in the conventional way, but want a better, cleaner (and faster) way of doing it.

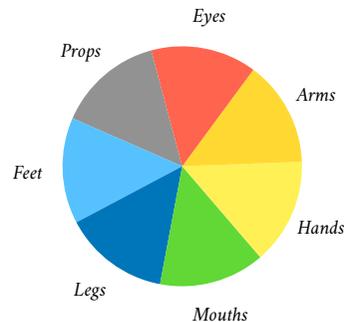
For rig work, this method can be very useful when creating sets of element such as Mouths, Hands, Eyes, as well as cannibalising Hands and Feet to make other hands and feet later on.

For conventional clean up work, this can aid the creation of smaller easing in-between frames.



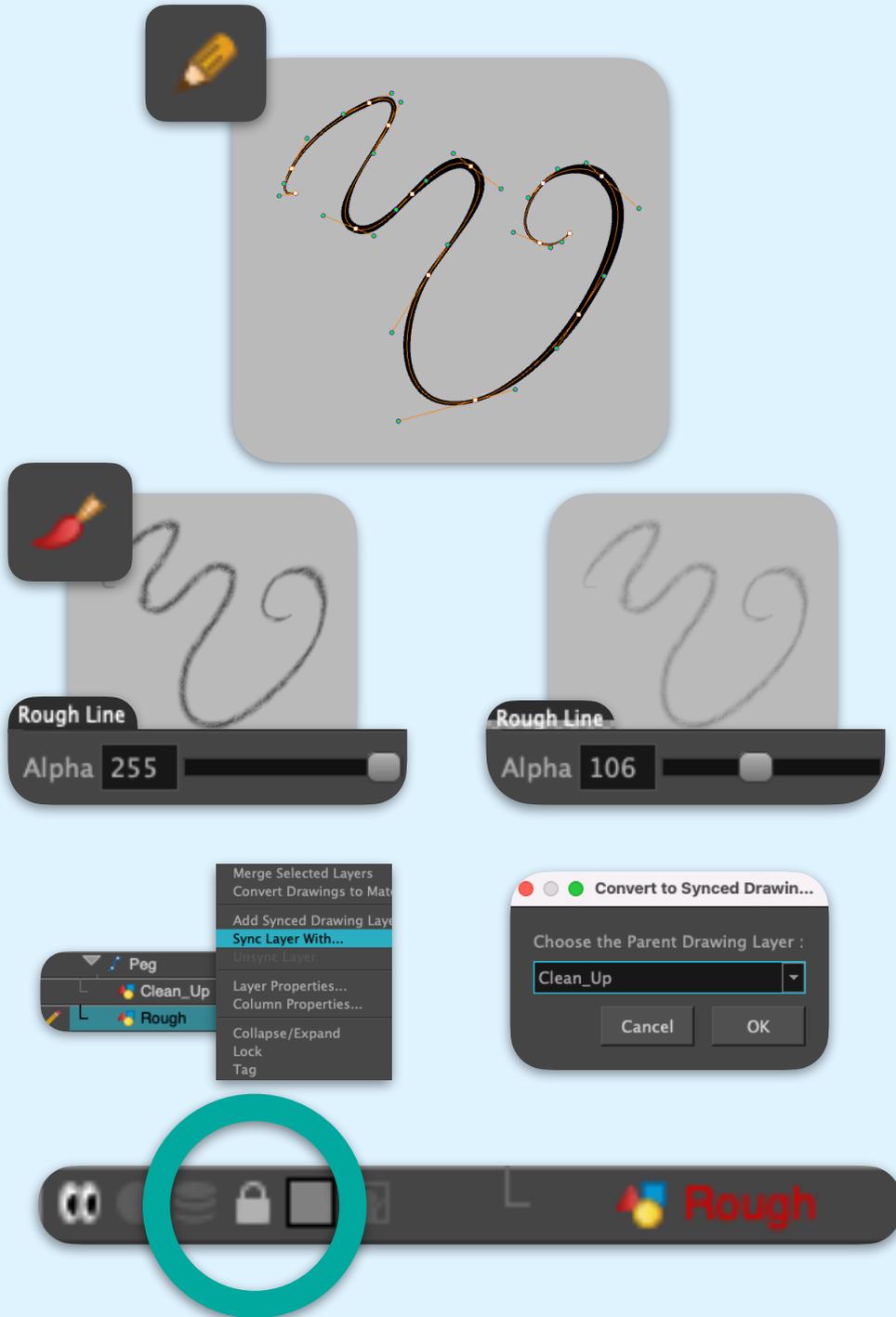


Semi Rigged Clean Up



Ingredients

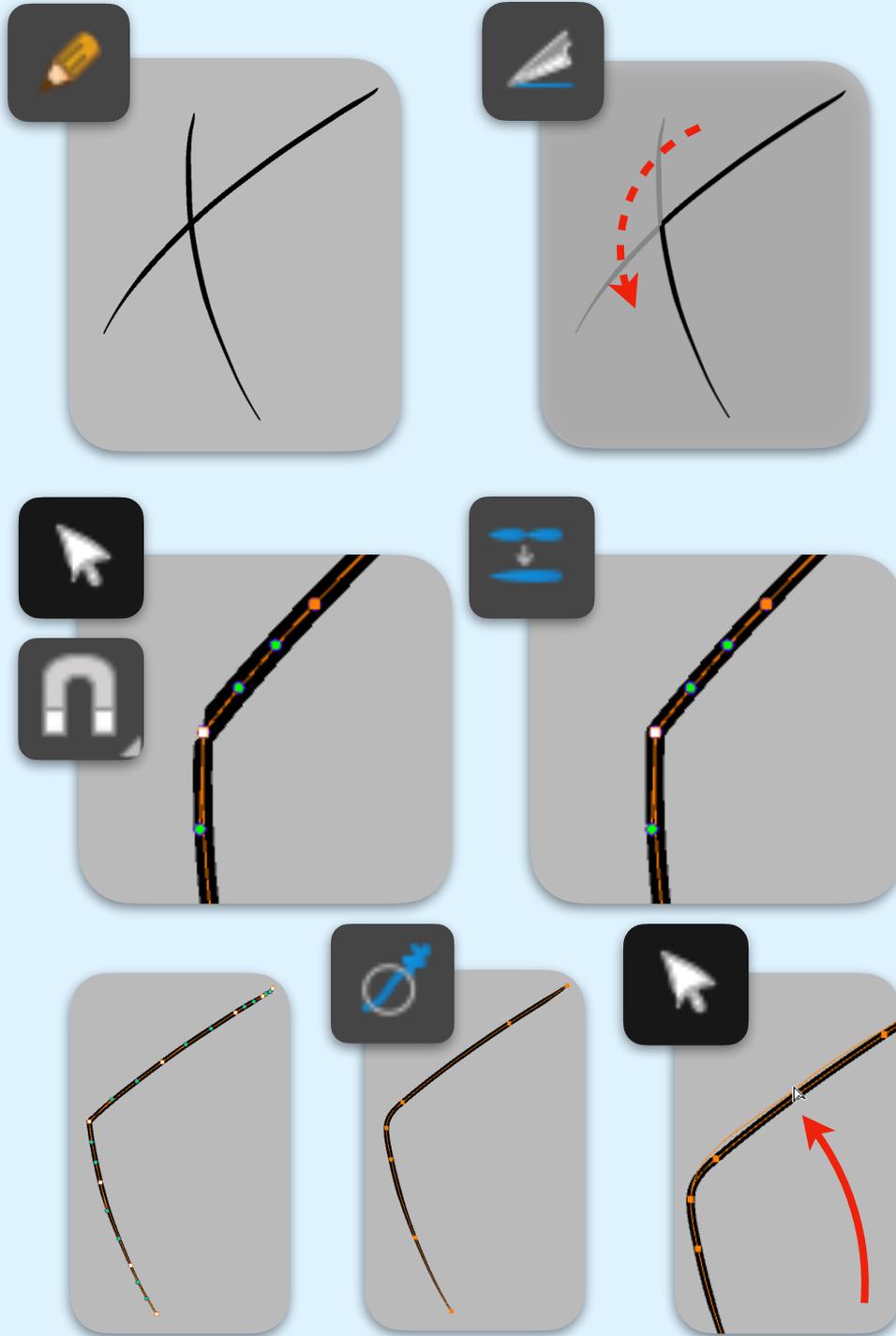
- Pencil or Brush Tool
- Contour or Centreline Editor Tool*
- Drawings
- Cutter Tool
- Select Tool
- Perspective Tool
- Envelope Tool



Semi Rigged Clean Up

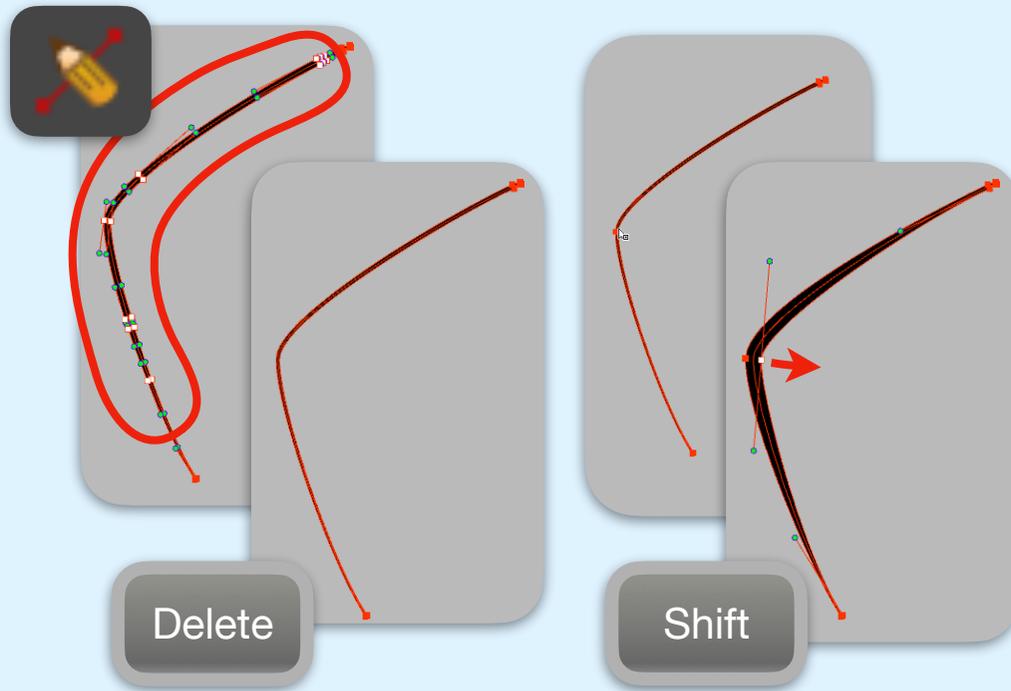
Method

1. For cleanup or puppet work, I would personally favour the Pencil tool as it gives the most precision and is easily altered and in it's way- is riggable.
2. Once you have your rough animation (probably created using the Brush tool) alter the line colour's Alpha value and possibly Hue so you can clearly see which is rough and which is a clean line. I tend to use a heavy texture on my rough work as I find it encourages alteration.
3. Also, it's a good idea to 'Sync' the Rough and the Clean Drawing layers before you start by selecting the Rough layer, right clicking the title and selecting 'Sync Layer With...' before selecting the 'Clean' layer in the drop menu.
4. And before cleaning up, lock the rough animation layer.



Pencil Method

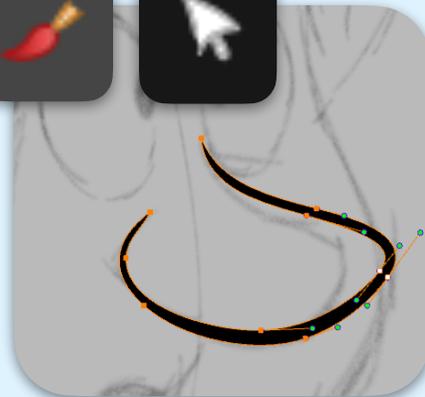
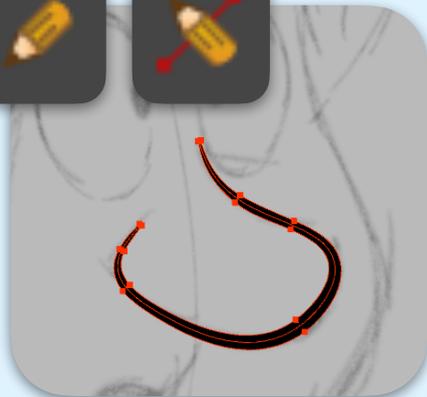
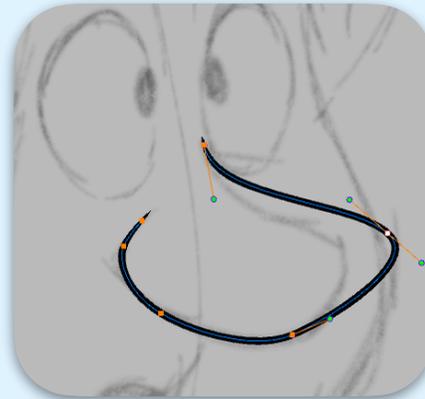
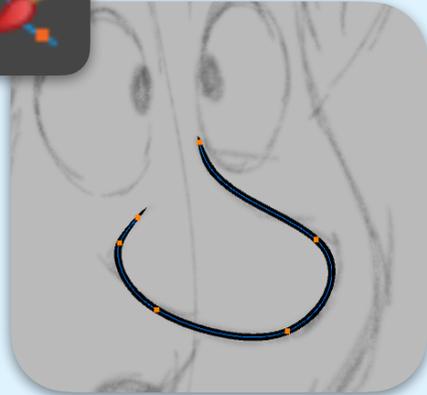
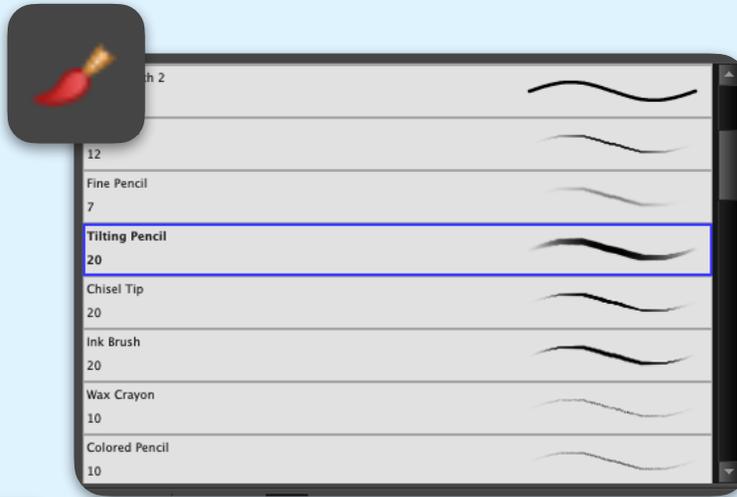
1. You can create tangents by drawing two dissecting lines and then slicing at the excess using the Cutter tool.
2. For any tangents that have a 'break' you can 'glue' them back together using the Contour Editor tool. Make sure the points are overlapping (Use the Magnet tool to help you), Lasso the relevant points, then press the 'Join Pencil Lines' Button found in the Contour Editor tool Properties.
3. Once the lines are drawn, you can remove excess points easily by pressing the Smooth button...
4. ...or by pulling or pushing at the lines using the contour editor tool.
5. You can also lasso the points and delete them and then tidy the line using the handles.
6. Alter the thickness of the line after you've actually drawn it with the Pencil Editor tool. Remove points by lassoing them and hitting Delete.



7. Add more points to fatten and thin the line hovering the mouse or pen over the line and hitting Ctrl (Windows/Linux) or ⌘ (macOS), then moving the points around either individually or both by holding down Shift.
8. Personally, I would avoid using the invisible strokes concept unless you need to colour something with missing lines, and even then I would suggest you 'nip' the appearance of the line so that you can easily 'animate' one line instead of three or four.

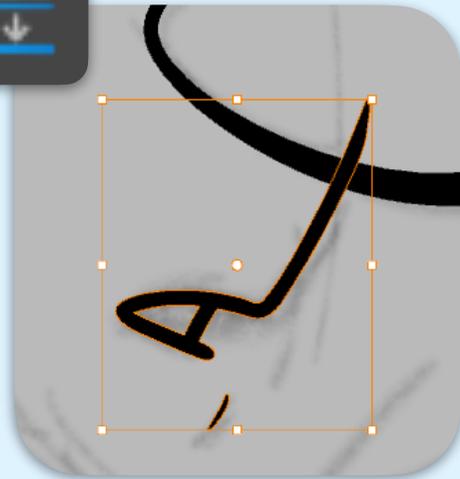
Here the Nose is created with a single rectangle.

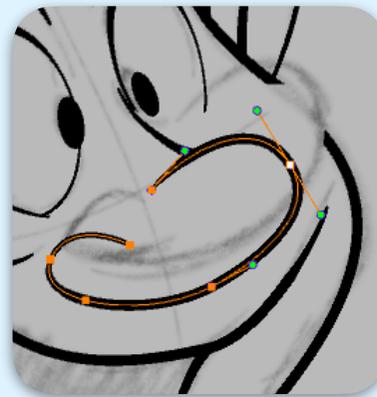
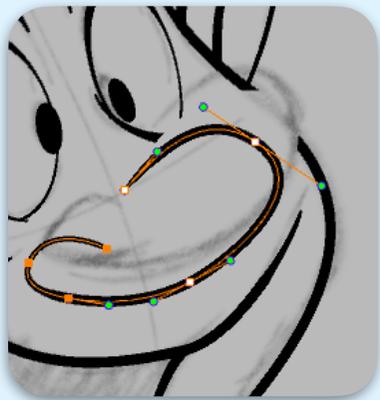
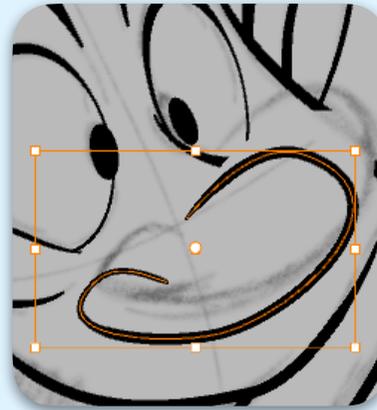
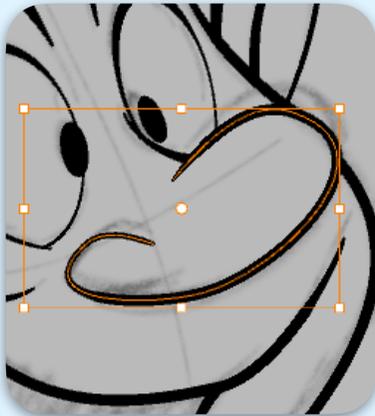
The 'missing' section of line is created by nipping the line as shown in the Z depth Sandwich Recipe.



Brush Method

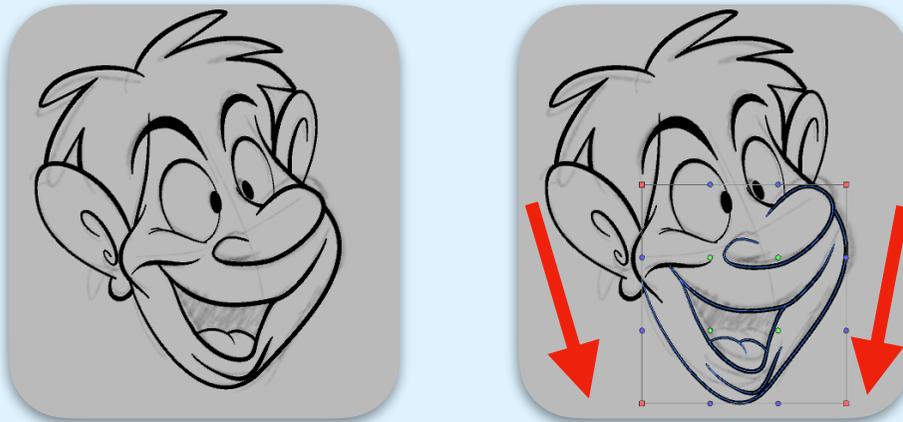
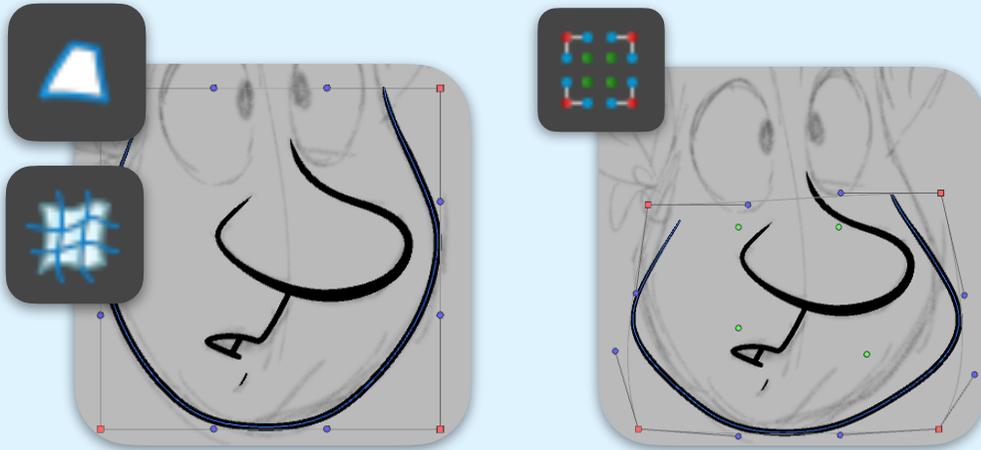
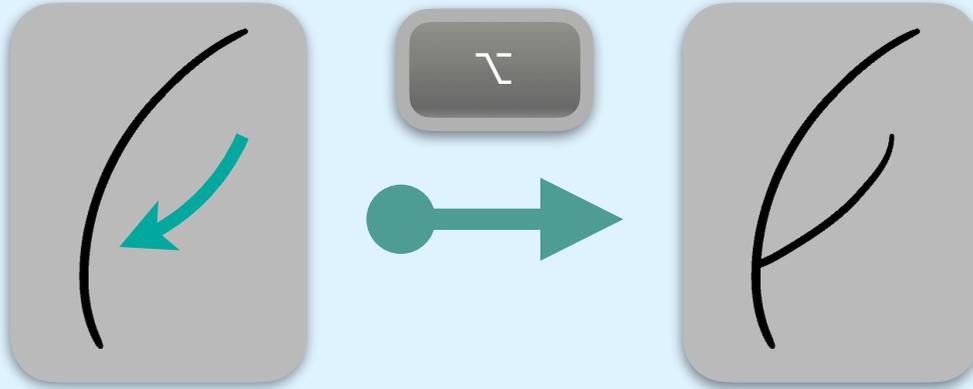
1. Unlike the Pencil Tool, the Brush line's texture always needs to be selected before you start drawing. As far as I know, you cannot change a Brush's texture after a Brush line has been made.
2. The Brush can be manipulated almost as easily as the Pencil line in the last few versions of Harmony thanks to the Centreline tool.
3. This allows the line to be pulled around with all the ease of a deformer.
4. They can also be cut in the same way as the Pencil Tool using the Cutter tool.
5. The main difference between this and a Pencil line now is largely how easily you can alter the thickness of the line. The Brush tool has the most configurability but at the cost of ease of use.





Clean Up Method

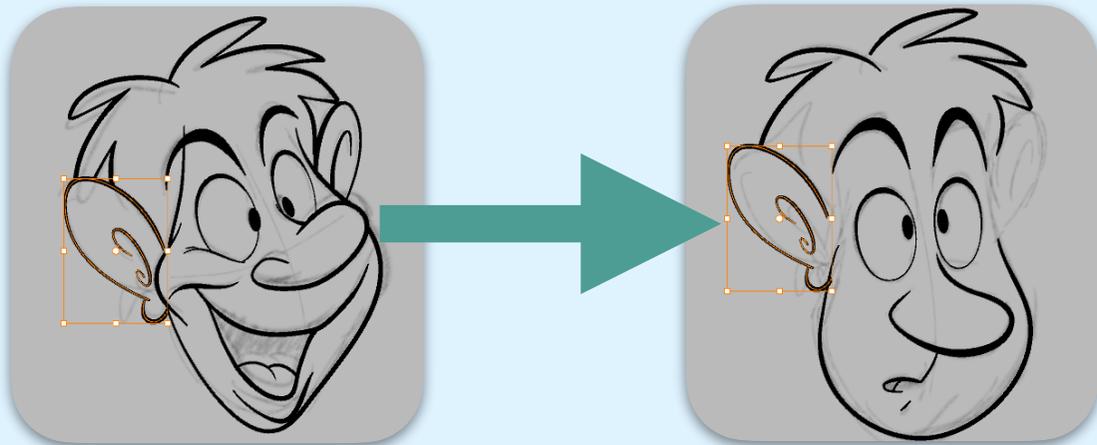
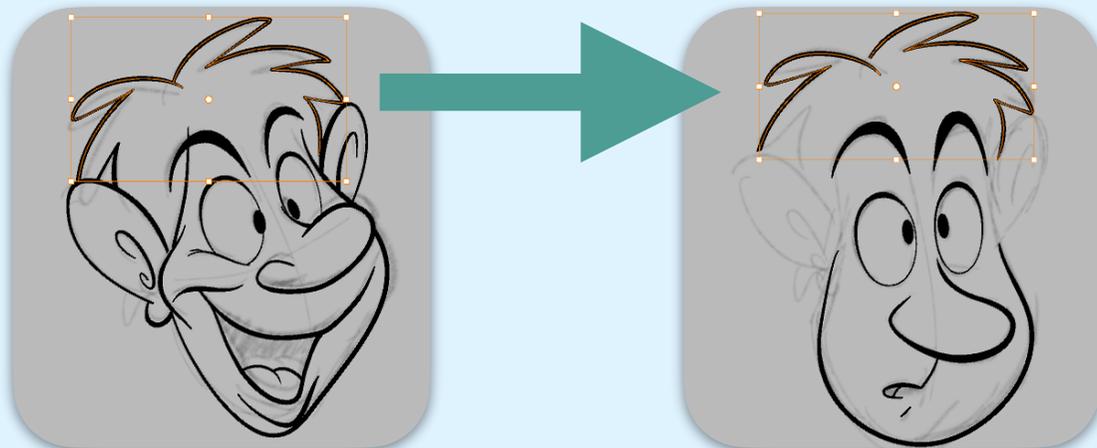
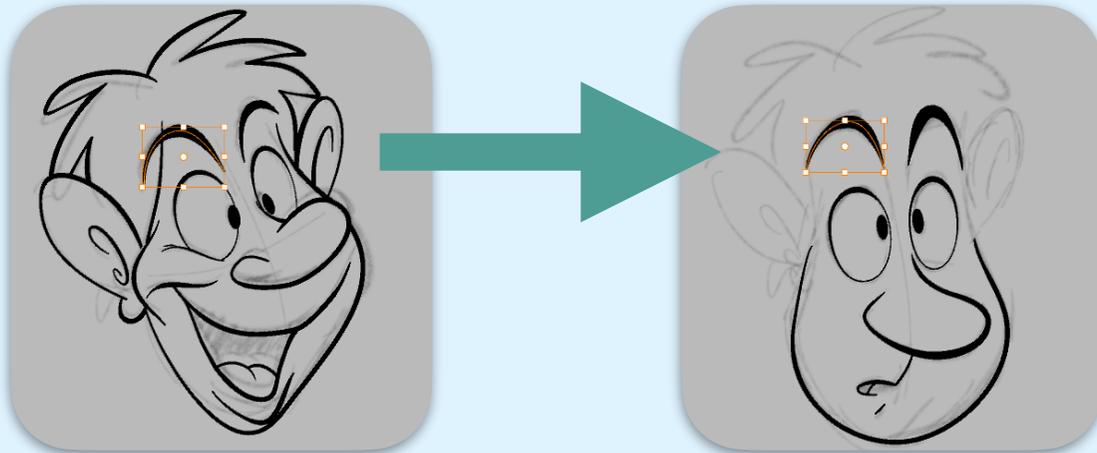
8. Once the drawing is cleaned up, duplicate the artwork by exposing the drawing over a few frames and hitting Duplicate Drawing.
9. Now to 'animate' the line into its new position. Grab large parts of the drawing using the select tool. Pull, rotate and skew things into place, roughly before the next step.
10. Next, use the Contour or Centreline tool to move the points of the line into their new positions. Use the arrow keys to nudge points by small amounts, and the arrows and shift to nudge by larger amounts.



11. To connect lines together magnetically when you draw near another line hold Alt (Windows/Linux) ⌘ (MacOS) when you want to connect- either at the beginning of a stroke or the end of one.

12. For both Pencil and Brush Tools, you can use the Perspective & Envelope tools to bend and push the overall shape around for either subtle or huge changes in form between drawings. The 'Show Advanced Controls' button gives you even more control in a similar way to a Weighted Deformer.

13. Go through the frames and essentially treat lines as body parts and features in the same way as you would a 'Rigged' character, moving things around in large rough clusters, then refining things to taste.



14. Or for very different key drawings, copy and paste sections of the character which are still similar and reuse them, and manipulate them a bit!

Adverts



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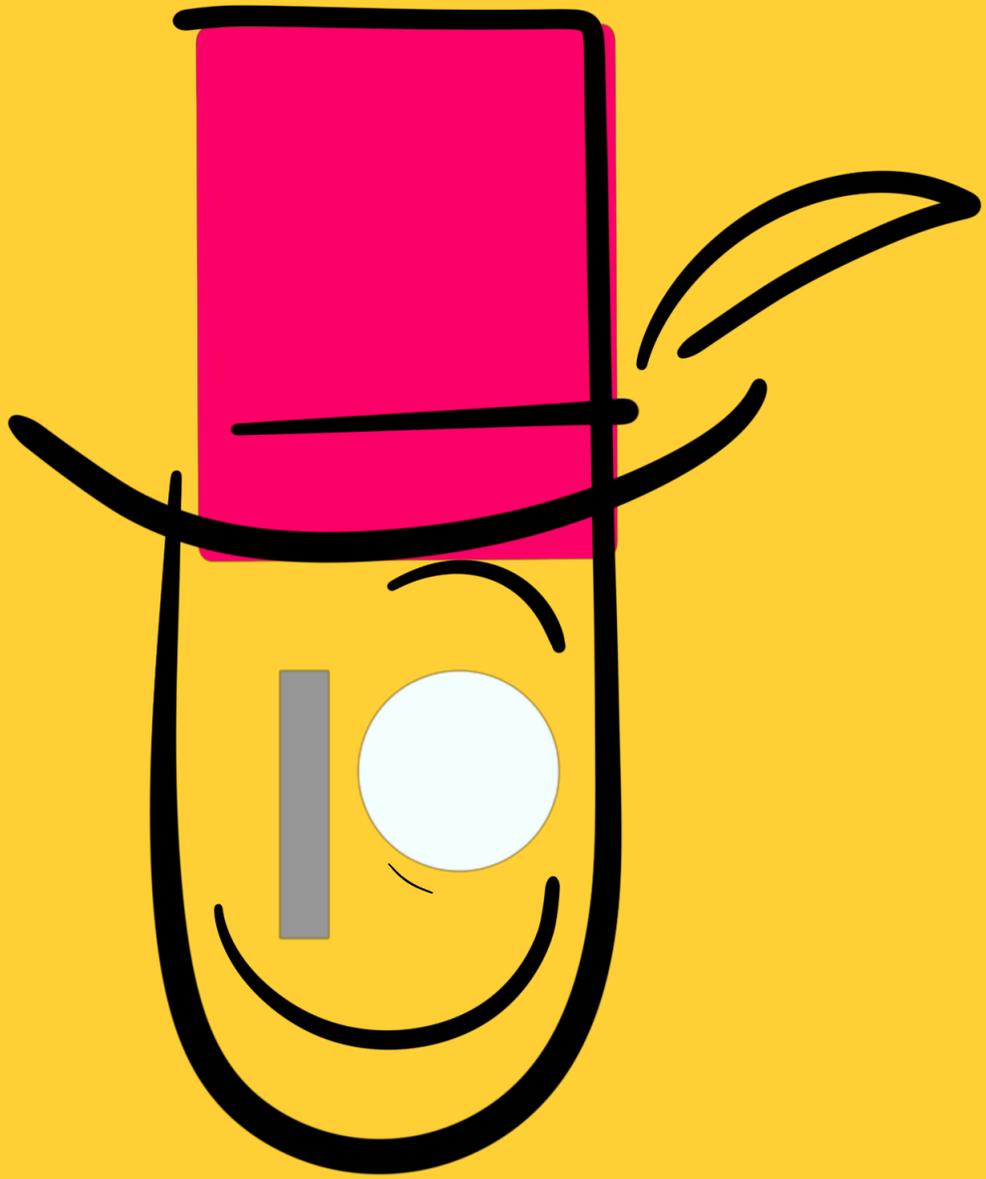
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The full set to be completed by 2023

CORE
(ONLINE ONLY AT FIRST)

LINE

FLESH

CLOTH

SPEECH

CONTROL

LIGHT

TEXTURE

3D



Core Chapter

Auto Auto Patch

Function Assists

Colour Selectors

Z depth Sandwiches

MultiPoint Sphere

Semi Rigged Clean Up

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