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Installation

Easy Clones is a .jsxbin file which needs to be installed into the ScriptUI Panels folder of the version of After Effects that you are using.

Windows:

C:\Program Files\Adobe\Adobe After Effects 2020\Support Files\Scripts\ScriptUI Panels

Mac:

/Applications/Adobe After Effects CC 2020/Scripts/ScriptUI Panels

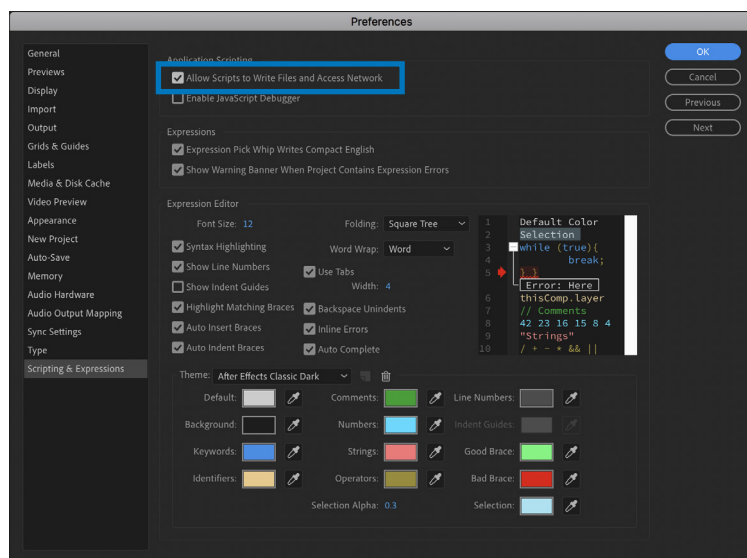
In order to run the script in After Effects you will need to enable 'Allow Scripts to Write Files and Access Network'.

Windows:

Edit > Preferences > Scripting & Expressions

Mac:

After Effects > Preferences > Scripting & Expressions



Finally, if you are a KBar user, you can create buttons using the following arguments:

- create clones
- add clones
- renumber clones
- shuffle clones
- centre clones
- delay expression

The SVG icons for each button are included in the zip folder from aescrpts + aeplugins.



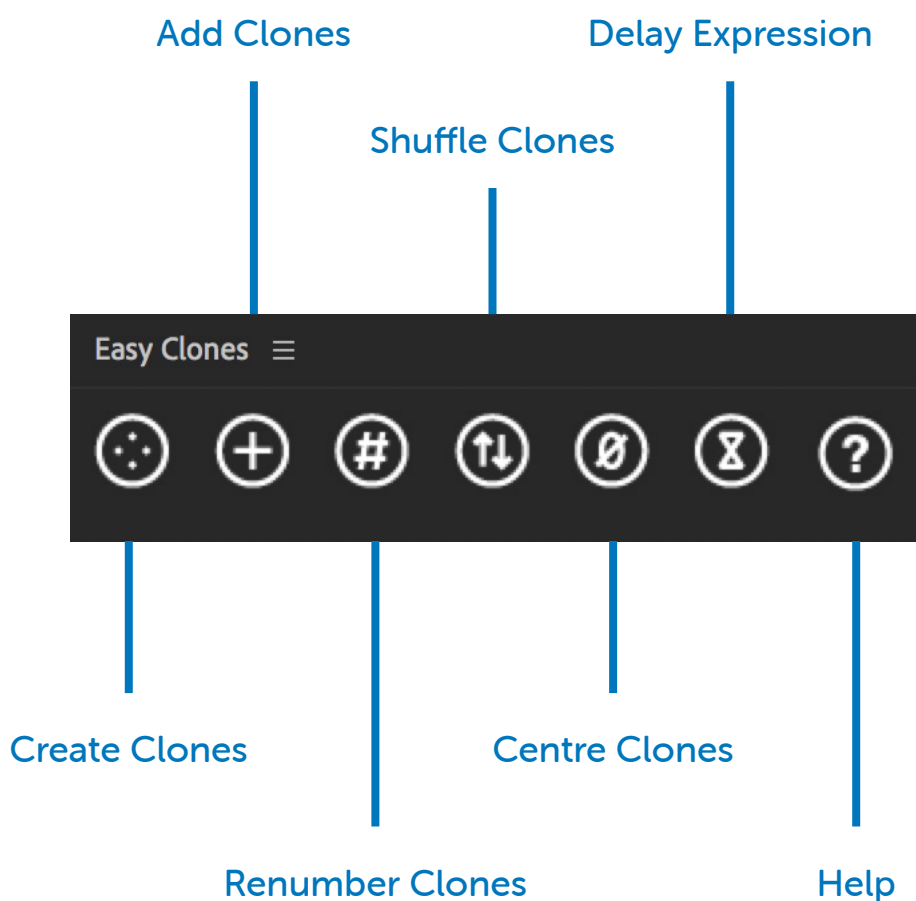
About

Easy Clones is a cloning system built for 2D artwork, including Bitmap Layers, Vector Layers, Shape Layers and Precomps.

Easy Clones creates a Clone Control Layer that will control basic properties (Position, Scale, Rotation and Opacity) as well as more advanced features within the Easy Clones effect.

Easy Clones allows users to quickly and easily apply randomness to their animations whilst maintaining complete control of the individual Clone Layers.

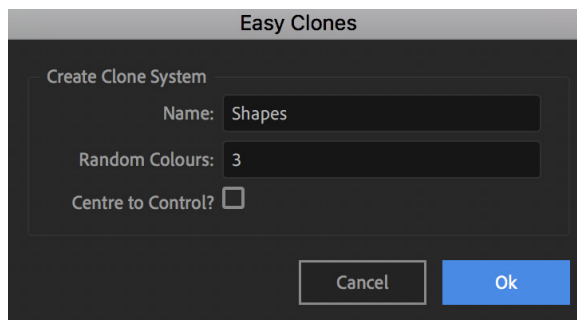
UI Panel





Creating a Clone System

To create a clone system, first select a layer(s) and click on the Create Clones button. This will open the following dialogue window:



Name your clone system, enter a number of random colours and finally select whether you need the clone layer(s) to be centred to the Clone Control Layer's position or remain in their unique position within the composition.

The script builds a Clone Control Layer using the name that you entered - in this example "Shapes Clone Controls" - and renames your selected layers to "Shapes Clone-1" and so on.

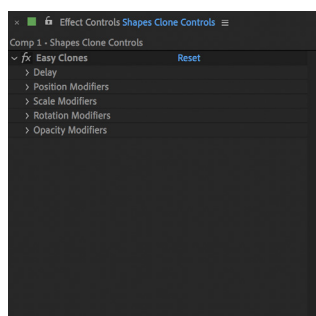
Using Easy Clones

The Clone Control Layer is used to manipulate the basic properties (position, scale, rotation and opacity) for all the clone layers associated to the clone system, i.e. if you animate the Clone Control Layer's x position from 960px to 1400px, each of the clone layers will move 440px relative to their individual position. (Please note: you may have multiple clone systems per composition).

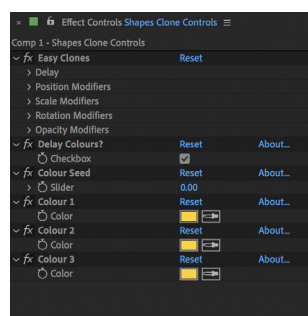
Effect Controls

The Clone Control Layer contains the Easy Clones effect and colour controls if random colours are added to your system. These effects will allow you to further control the clone system.

Without Random Colours



With Random Colours





Delay

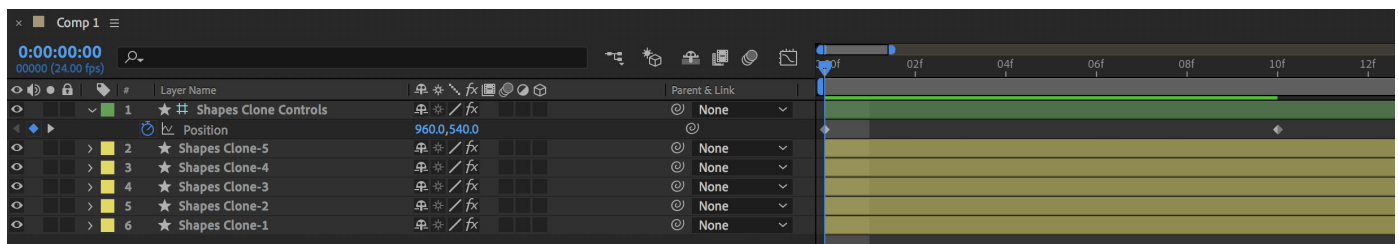
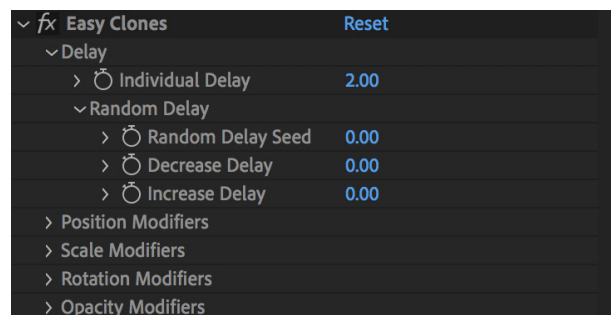
Easy Clones has an inbuilt delay system with the following controls:

Individual Delay - This sets the amount of frames that each clone will be delayed by.

Random Delay Seed - This value will associate a new random delay value to the clone layers within the range defined by the decrease and increase values.

Decrease Delay - This value will subtract frames from the individual delay value (forwards in time).

Increase Delay - This value will add frames to the individual delay value (backwards in time).

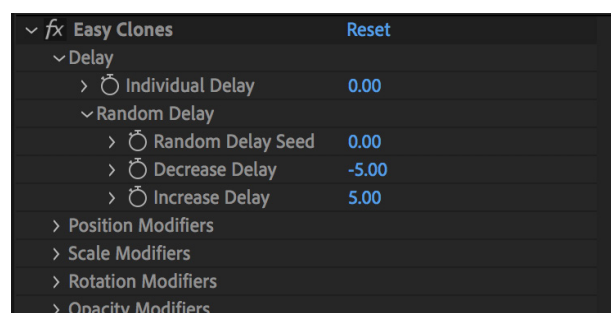


Individual Delay

The delay system uses the number at the end of the clone layer's name to establish how it will be effected by the delay. In the above example, as the individual delay is set to 2: "Shapes Clone-1" would begin to move on frame 0, "Shapes Clone-2" would then be delayed by 2 frames and "Shapes Clones-5" would be delayed by 8 frames.

Random Delay

The random delay controls either add or subtract a number of frames from the value of the individual delay, which effects the overall delay of each individual clone layer. The decrease and increase delay controls define the range of the delay's randomness. See below:



In this example, because the individual delay is set to 0, the clone layers will activate when the playhead reaches our first keyframe. However, because the decrease delay is set to -5 and the increase delay is set to 5, we have a random range of 10 frames - meaning that the clone layers will activate either 5 frames before the first keyframe, or 5 frames after.



Modifiers

The modifiers add randomness to the value of the basic properties (position, scale, rotation & opacity).

Each property modifier contains the following controls:

Delay Checkbox - This will determine whether the Modifiers will be affected by the delay if keyframed.

Seed - This value will associate a new random value for each clone layer within the range defined by the decrease and increase values.

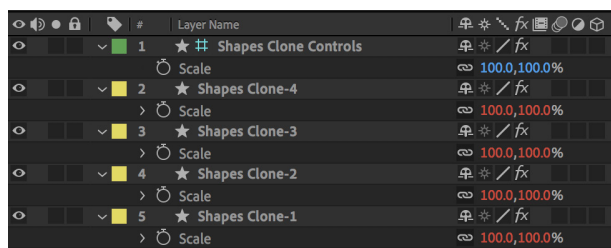
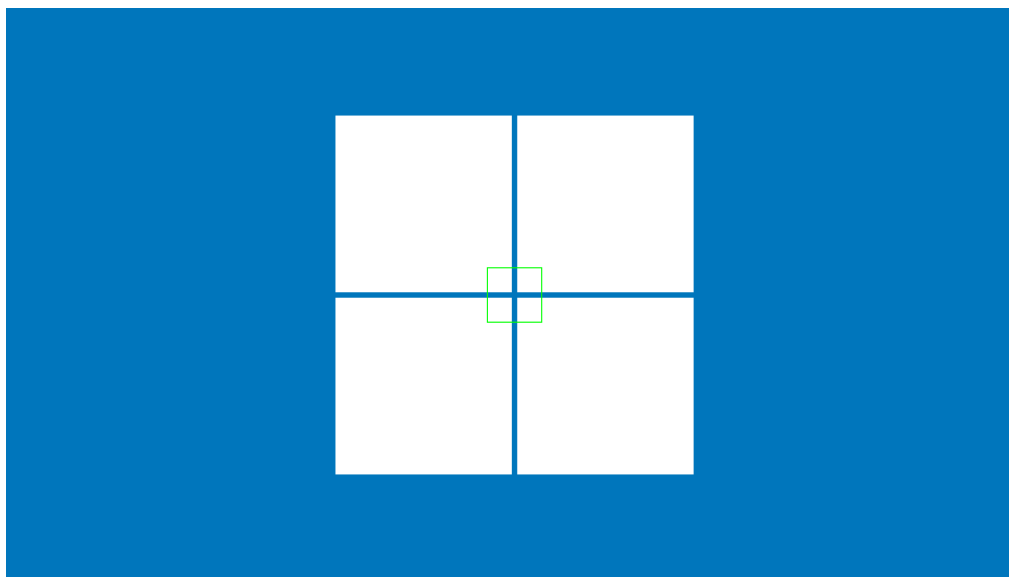
Decrease - This value will subtract from the basic property set creating a range for the randomness.

Increase - This value will add to the basic property set creating a range for the randomness.

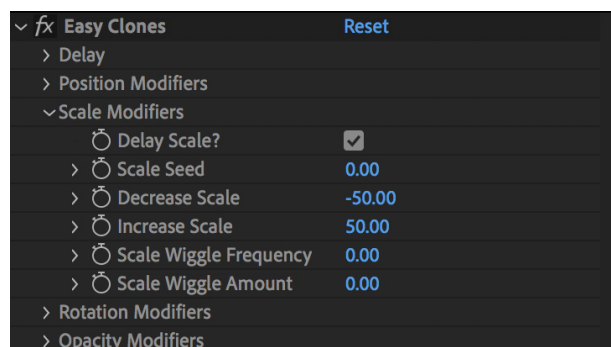
Wiggle Frequency - Defines the frequency of the wiggle for the individual clone layers.

Wiggle Amount - Defines the amount of the wiggle for the individual clone layers.

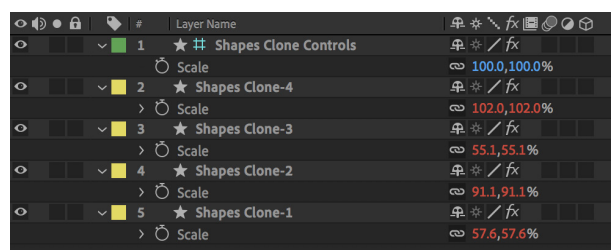
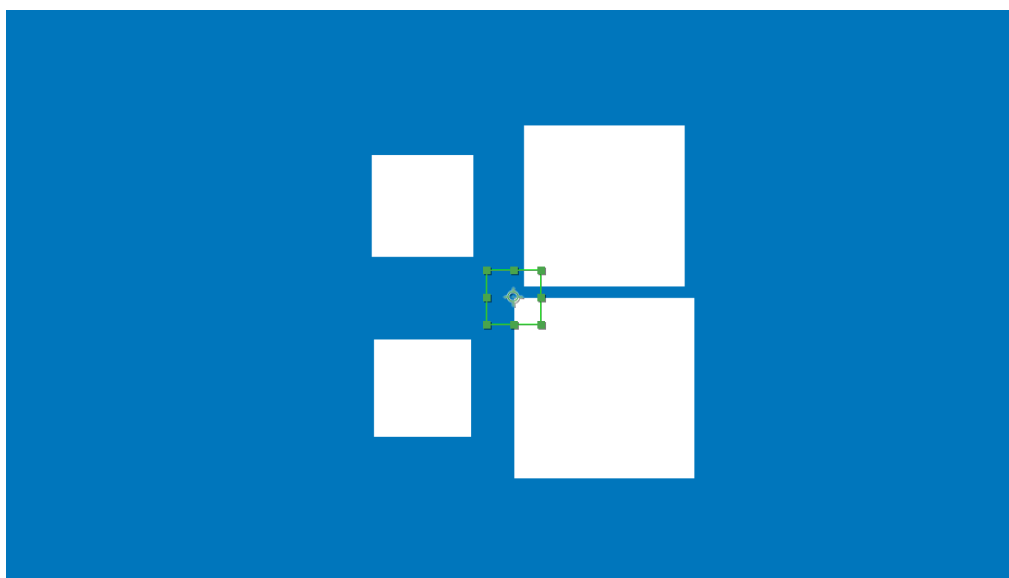
Over the next few pages, we'll explore the above features which apply to all of the property modifiers, in this case using scale as the example.



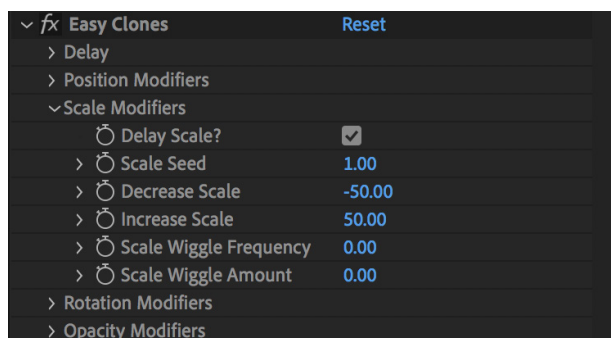
In the example above we have 4 squares as our clones and "Shapes Clone Controls" scale is set to 100%, therefore all of the clones are also 100% on their scale value.



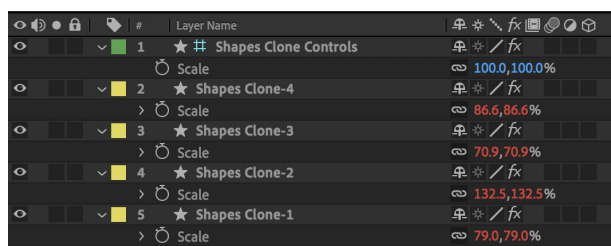
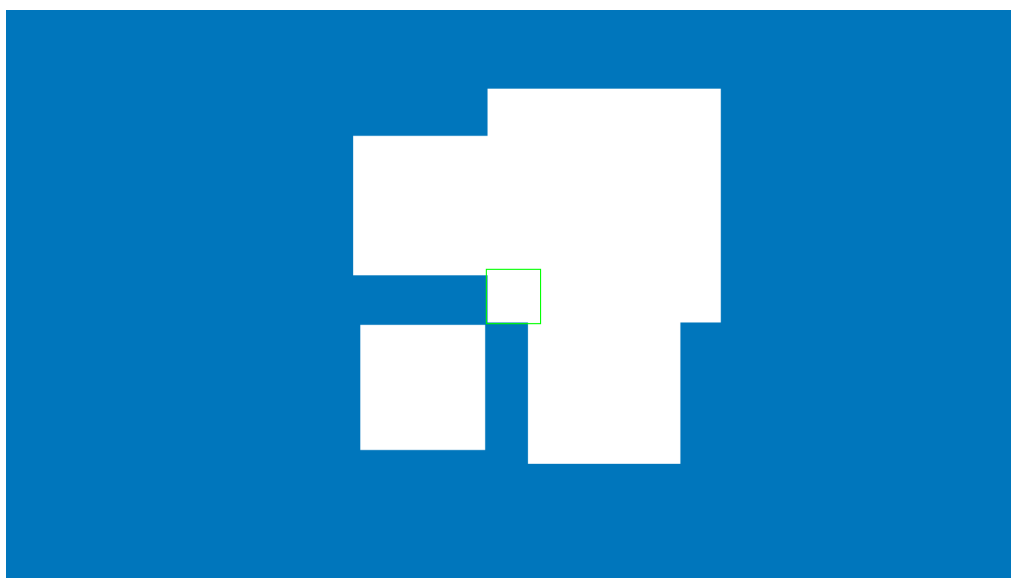
If we set the decrease scale value to -50 and the increase scale value to 50 we create a range of 50% to 150% as our "Shapes Clone Controls" scale is set to 100%.



Which has the following effect to our clone layers. As you can now see, our clones are giving a random scale value within our range of 50% to 150%.



If we change the value of the scale seed from 0 to 1 we allocate a new seed for all of our clone layers.



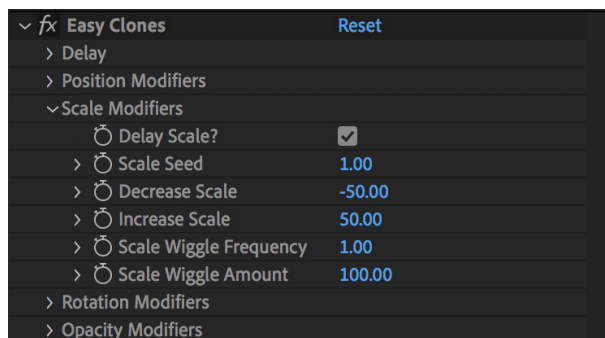
Which has the following effect to our clone layers. As you can see, our clones scale values have changed, but they remain within the range 50% to 150%.



Wiggles

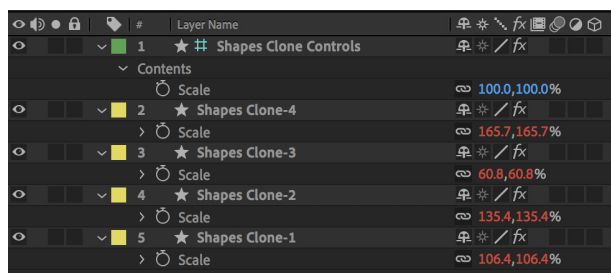
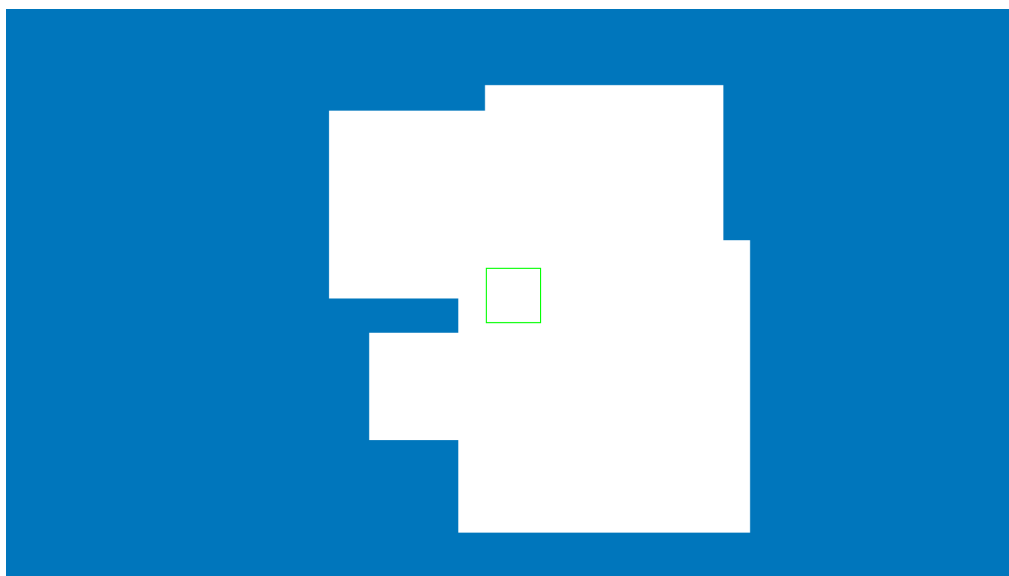
Each property modifier also contains a wiggle which is unique for each individual clone layer. The wiggle works as you would expect if you added a wiggle expression to a property.

Wiggle (Frequency,Amount);



If we set scale wiggle frequency to 1 and scale wiggle amount to 100 we are effectively adding the following expression on top of our decrease and increase.

Wiggle (1,100);

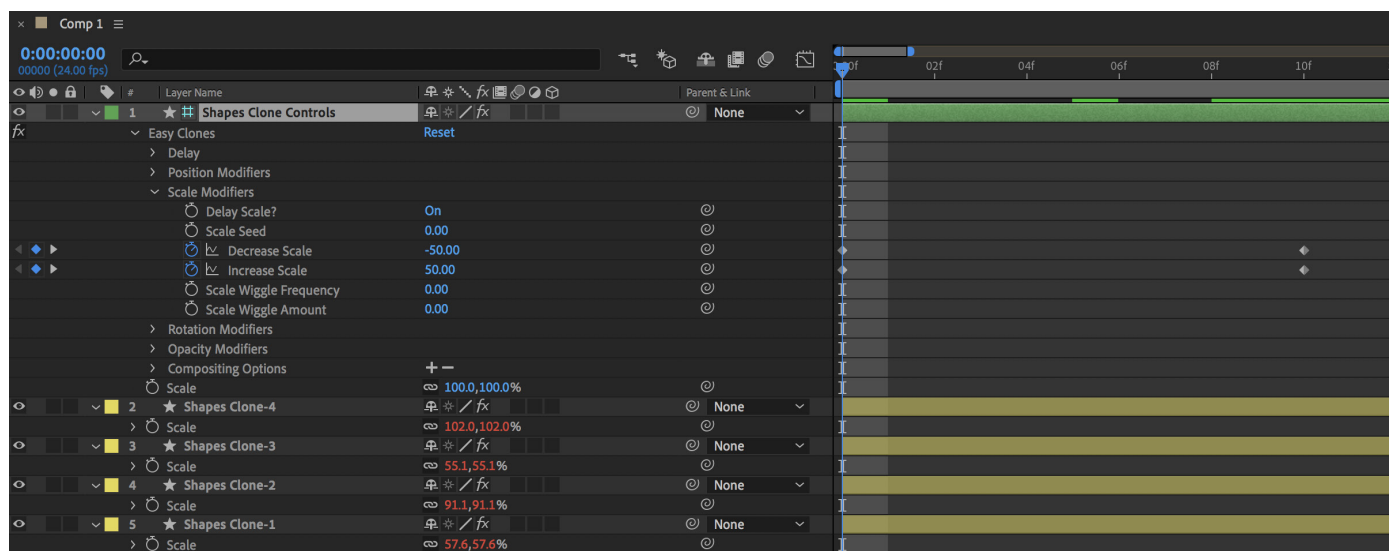


Which has the following effect to our clone layers' scale value. You will notice that some of our scale values now exceed the defined range. These values will vary over time based on the parameters defined by the wiggle.

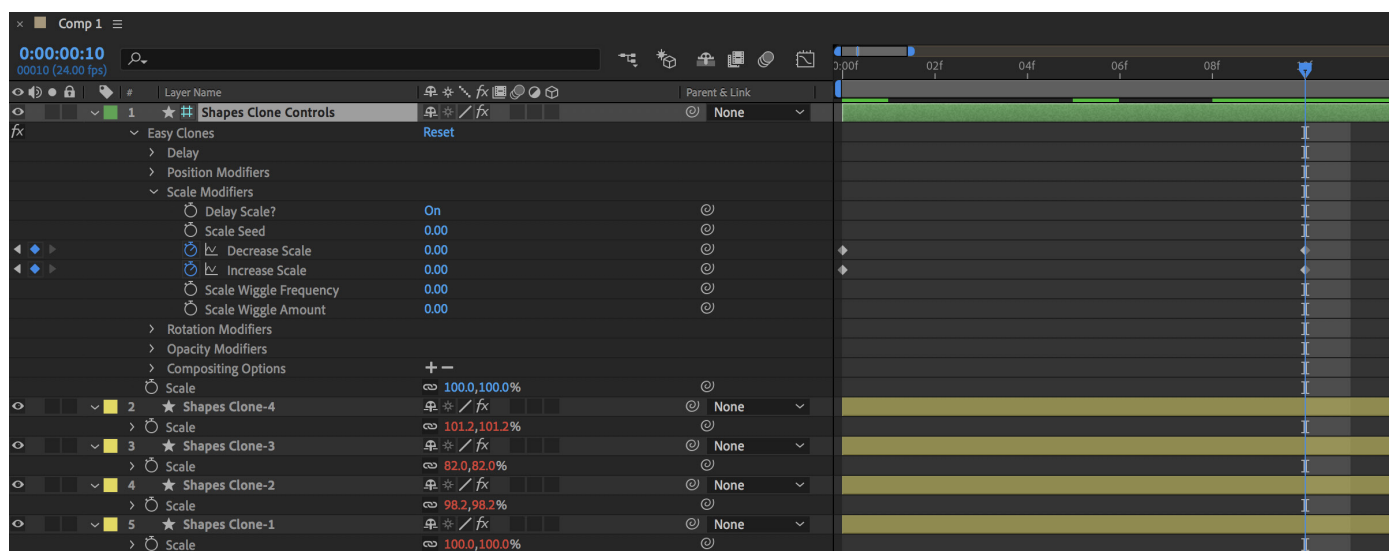


Modifier Delay Checkbox

Each of the controls within the Easy Clones effect can also be animated. If you decide to animate these controls then the modifier delay checkboxes may come in handy.



In the above example, we have an animation on the decrease and increase scale and delay scale checkbox is turned on. You will notice that on frame 0 we have random scale values on our clone layers between 50% to 150%.

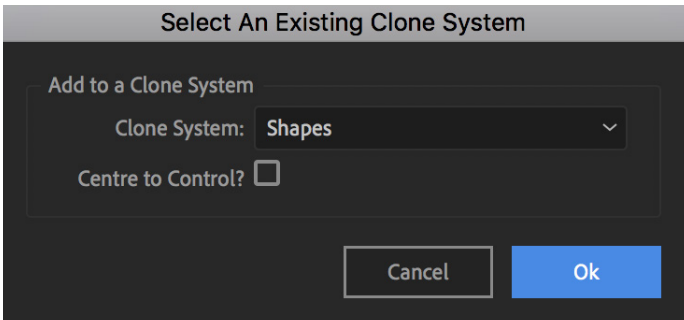


At frame 10 our decrease and increase values are set to 0 but you'll notice only "Shape Clone-1" has returned to the scale value 100% and the other clone layers still have a random scale value. This is because the scale delay checkbox is turned on and therefore our animation is also affected by our individual delay value, which in this example is set to 2 frames. If the scale delay checkbox was turned off, at frame 10 all of our clone layers would have a scale value of 100%.

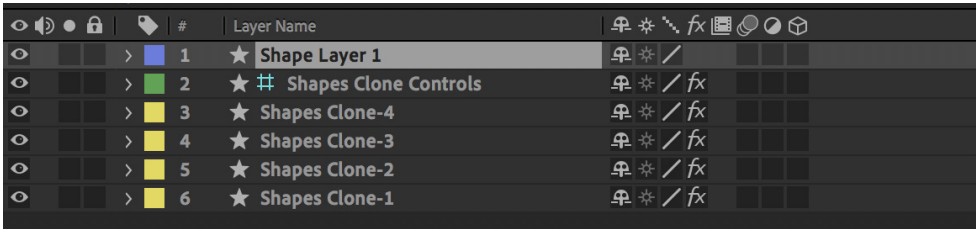


Adding Clones

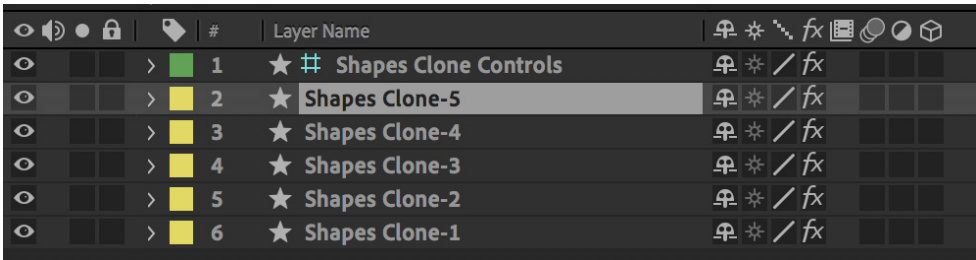
You can easily add new artwork (Bitmap Layers, Vector Shape Layers or Precomps) to an existing clone system using the Add Clones button.



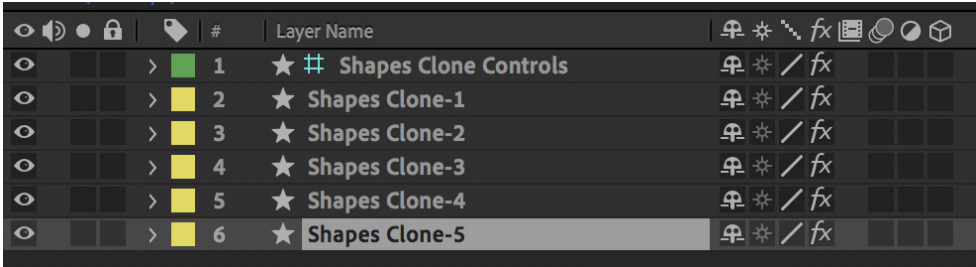
Select the new artwork that you wish to add to an existing Clone System and click on the Add Clones button. A dialogue window will give you a dropdown menu with all the existing clone systems within your active composition, select a system from the dropdown and choose whether you wish to centre the artwork to the Clone Control Layer. The artwork will then be added to the clone system, the new clones will be named after the largest number within the system i.e. if “Shapes Clone-4” was the largest number the newly added clones will be named “Shapes Clone-5” and so forth.



The examples below demonstrate what happens when your “Shape Layer 1” (above) is added to the “Shapes” clone system.



In the above example, we have a descending layer order, so the clone is added above the layers. Below we have an ascending layer order, so the clone is added below the layers.





Renumber Clones

There will be several instances where you may need to renumber clone layers, especially after using the Shuffle and Add Clones buttons. Renumbering clones will reassign their position within the delay system, allowing you to control the order in which the clones will be activated during your animation. To renumber your clones, simply select the clone layers and click the Renumber Clones button.



Renumber Clones

				#	Layer Name
					1 ★ # Shapes Clone Controls
					2 ★ Shapes Clone-2
					3 ★ Shapes Clone-1
					4 ★ Shapes Clone-5
					5 ★ Shapes Clone-3
					6 ★ Shapes Clone-4

In the example below, the clones were selected from the bottom - top, you'll notice the clones are numbered in a descending order.

				#	Layer Name
					1 ★ # Shapes Clone Controls
					2 ★ Shapes Clone-5
					3 ★ Shapes Clone-4
					4 ★ Shapes Clone-3
					5 ★ Shapes Clone-2
					6 ★ Shapes Clone-1

In the example, below the clones were selected from the top - bottom, you'll notice the clones are numbered in an ascending order.

				#	Layer Name
					1 ★ # Shapes Clone Controls
					2 ★ Shapes Clone-1
					3 ★ Shapes Clone-2
					4 ★ Shapes Clone-3
					5 ★ Shapes Clone-4
					6 ★ Shapes Clone-5



Shuffle Clones

There will be several instances where you may need to shuffle clone layers, especially after using the Add Clones button. For example, if you have a clone system filled with squares and you later decide to add some triangles into the system, all of the triangles will have higher numbers in their name, meaning that they will activate later in the delay. By shuffling the clones, you mix up the clone layers' index numbers, allowing you to use the Renumber Clones button to quickly assign new numbers to the clones, changing their order in the delay system.



Shuffle Clones

				#	Layer Name
				1	★ # Shapes Clone Controls
				2	★ Shapes Clone-1
				3	★ Shapes Clone-2
				4	★ Shapes Clone-3
				5	★ Shapes Clone-4
				6	★ Shapes Clone-5

Below is an example of how the clone layers' index numbers are reordered when the Shuffle Clones button is clicked.

				#	Layer Name
				1	★ # Shapes Clone Controls
				2	★ Shapes Clone-3
				3	★ Shapes Clone-1
				4	★ Shapes Clone-4
				5	★ Shapes Clone-5
				6	★ Shapes Clone-2

You can then select your clone layers from the bottom - top to renumber them in a descending order.

				#	Layer Name
				1	★ # Shapes Clone Controls
				2	★ Shapes Clone-5
				3	★ Shapes Clone-4
				4	★ Shapes Clone-3
				5	★ Shapes Clone-2
				6	★ Shapes Clone-1



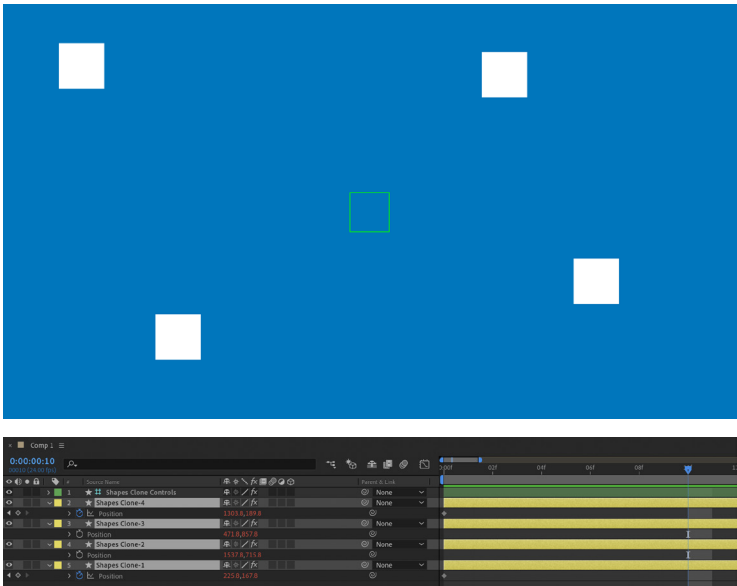
Centre Clones

The Centre Clones button provides a quick way to centre clone layers to their control layer’s position. Simply select the clones that you wish to centre and click the Centre Clones button.

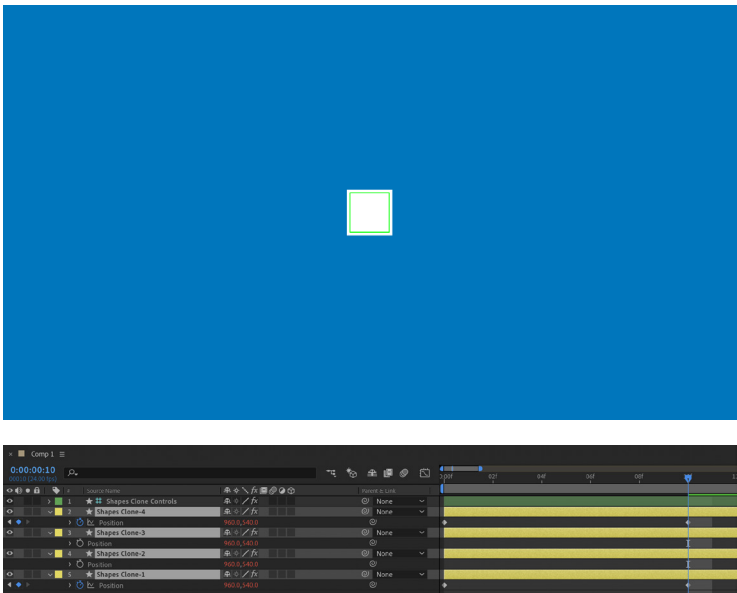


			#	Source Name
			1	★ Shapes Clone Controls
			2	★ Shapes Clone-4
			3	★ Shapes Clone-3
			4	★ Shapes Clone-2
			5	★ Shapes Clone-1

In the example below, we have four clones with unique position values. “Shapes Clones-1” and “Shapes Clones-4” have keyframes on frame 0.



Clicking Centre Clones causes the selected clones to snap to the control layer’s position value - “Shapes Clones-1” and “Shapes Clones-4” will plot new keyframes on frame ten where the playhead is located, therefore creating an animation from the original position value to the clone layers position value.



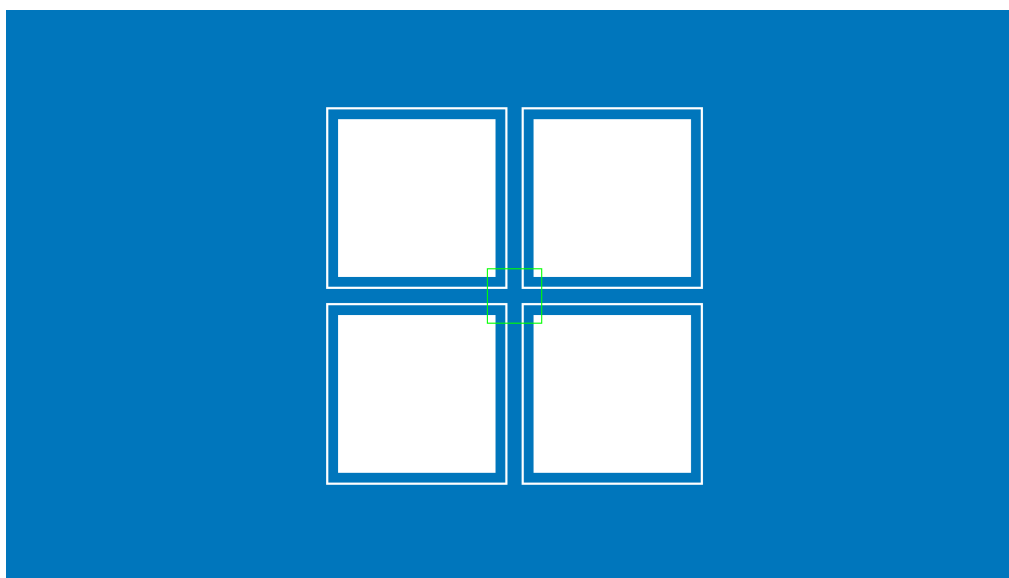
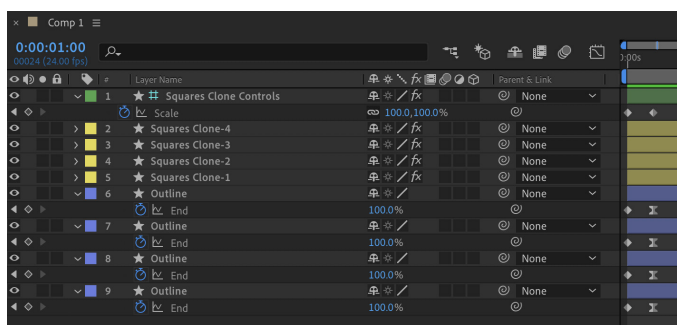


Delay Expression

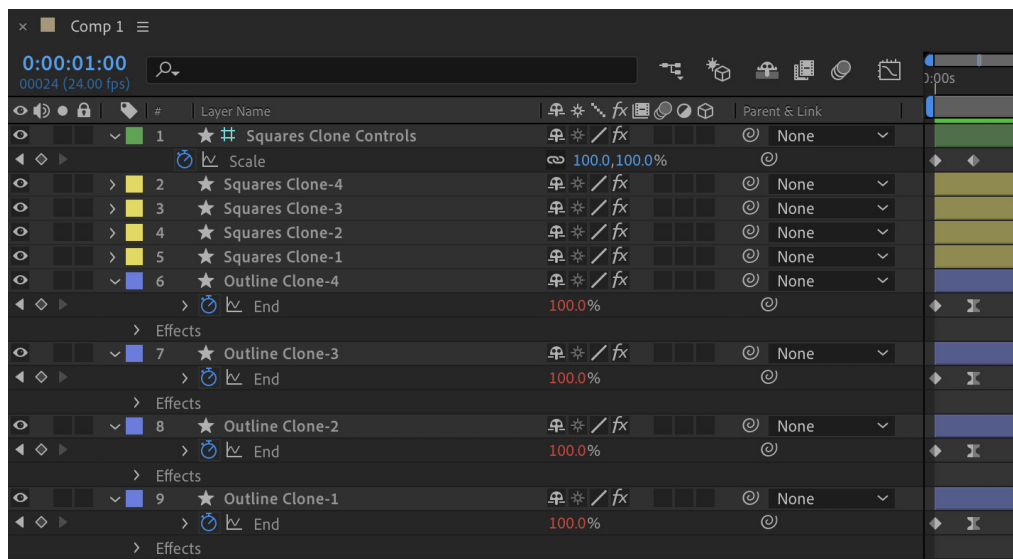
The Delay Expression button allows you to add any property to a clone system's delay. This extends to artwork outside of a clone system i.e. if you have a shape layer with a trim path, the start and end properties can be added to an existing clone system despite the shape layer not being a clone layer.



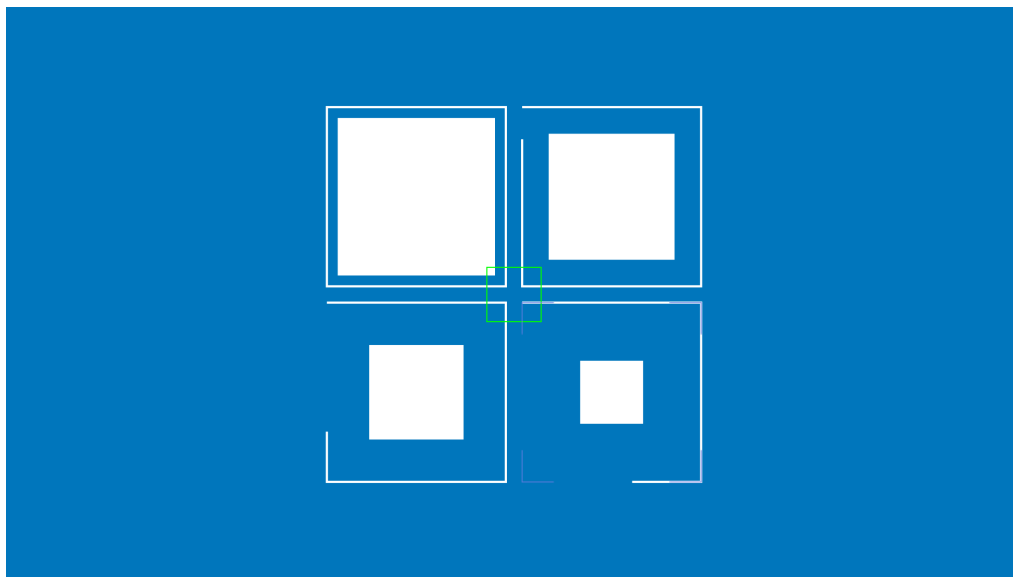
Delay Expression



In the above example, we have a Clone System containing four squares that grow from 0% to 100% on their scale property over 10 frames. There are also four outlines with a trim path animation on the end property. We can select the end keyframes and click the Delay Expression button to add the end properties to the "Squares Clone Control's" delay of 2 frames.



The outline shape layers are renamed to match the Easy Clones' naming convention so that they can be linked to the delay system. An expression is added to the end properties so that when the animation is played, "Squares Clone-1" and "Outline Clone-1" activate on frame 0 and "Squares Clone-2" and "Outline Clone-2" activate on frame 2, as the delay is set to 2 frames.

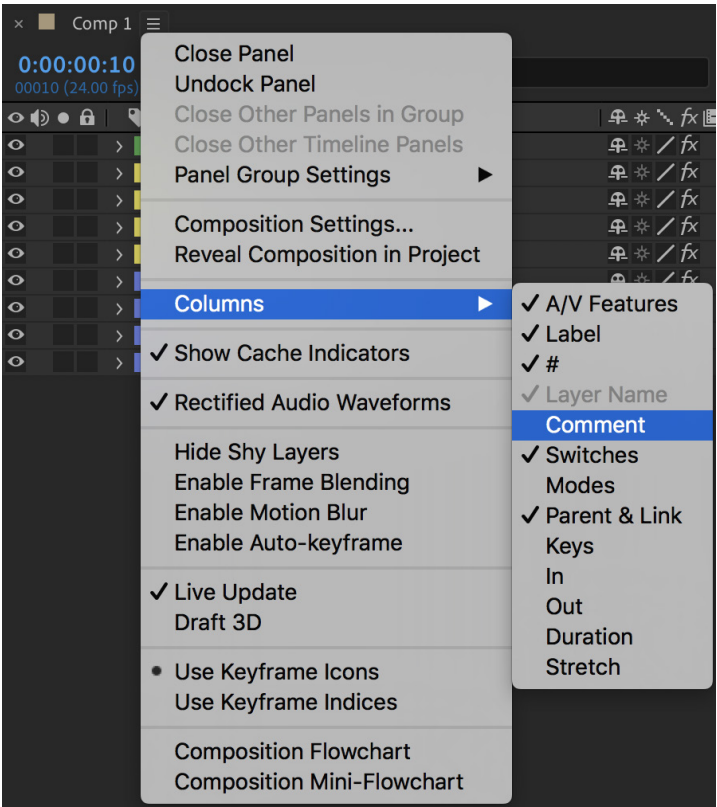


Above is frame 10 of the animation, as you can see "Squares Clone-1" and "Outline Clone-1" have both finished their animation and the other clones are mid animation respective of their delay.



Troubleshooting

Easy Clones stores the name of the clone system on each clone layer within its comment field. (Accessible by clicking on the Timeline Hamburger > Columns > Comment).



The below image shows how each clone stores its clone system's name.

	#	Layer Name	Comment
1	★ #	Squares Clone Controls	
2	★	Squares Clone-4	Squares
3	★	Squares Clone-3	Squares
4	★	Squares Clone-2	Squares
5	★	Squares Clone-1	Squares
6	★	Outline Clone-4	Outline
7	★	Outline Clone-3	Outline
8	★	Outline Clone-2	Outline
9	★	Outline Clone-1	Outline



			#	Layer Name	Comment
		>	1	★ Squares Clone Controls	
		>	2	★ Clone-8	
		>	3	★ Clone-7	
		>	4	★ Clone-6	
		>	5	★ Clone-5	
		>	6	★ Clone-4	
		>	7	★ Clone-3	
		>	8	★ Clone-2	
		>	9	★ Clone-1	

If you find when you renumber clones that they are named " Clone-1" and so forth, this is because the comment has been deleted. To fix this, you will need to write the name back into the comment field and renumber the clone layers.

A common cause for lost comments is if vector layers are used when establishing a clone system. If you later convert the vector layer to a shape layer, the comment information will be lost. This is because After Effects does not transfer any information in the comment field during the conversion so your new shape layer will contain an empty comment field.

			#	Layer Name	Comment
		>	1	★ Square Outlines	
		>	2	Square	Square



Acknowledgements

Launching Easy Clones has felt like a momentous achievement for me, it has taken almost eleven months to code. It has been a long, sometimes frustrating, journey. But in the process I've learnt a lot about JavaScript and I've managed to befriend many wonderful and talented animators / coders who have kindly helped me to better understand the JavaScript language.

That said, I need to say a huge thank you to the following people:

Tomas Šinkūnas, Sam Catt, Nicolas Dufresne, Kyle Martinez, Zack Lovatt and John Colombo. Thank you all for your patience with my annoying and probably stupid questions, all of you at some point shared snippets or even corrected my code, so without you all Easy Clones would not exist.

A special thank you to Stephen Minty and Marta Azaña for testing multiple versions of the script, reporting back all bugs and giving me suggestions. You both helped tremendously in improving the tool.

I received a lot of useful comments and feedback on the beta version of the script, so I'd like to say another big thank you to the following people for taking the time to test my script, you all rock!

Stephen Minty	Marta Azaña
Oliver Sin	James Huson
JD Horton	Andrew Embury
Simon Trotz	Steve Kirby
Arne Breusing	Jeff Webb
Sam Mularczyk	Zach Christy
Neil Grunshaw	Michael Struble
Ben Thompson	Floris Van Der Harst
Drew Jackson	Kirtan Patel
Bard Edlund	Kyle Martinez
Joris Van Raaij	Metehan Korkmaz
Kevin Snyder	Roland Kahlenberg
Gerold Brunner	Stephen Ong
Matthew Sienzant	Sanae Kikuchi

Thank you to Marta Azaña and Ceril Drouin for helping test Easy Clones on multiple language versions of After Effects.

A huge thank you to my partner Gem for supporting me throughout this journey, listening to all my boring code frustrations and for proofreading all my documents so that they are understandable.

Finally (if you have read this far) thank you for downloading Easy Clones, I hope that you enjoy using the tool as much as I have enjoyed creating it.