

# The Complete Guide to Blender Graphics

## Supplement-09

### 2D Animation with Strokes

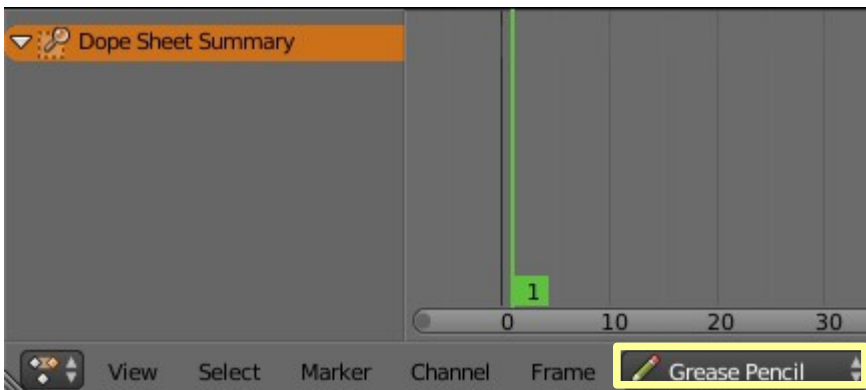
Blender is all about working in an artificial 3D World, therefore it may appear incongruous to include 2D Animation as part of its tool set. However, 2D Animation is a fun thing to do and continues to play a significant part in the visual arts. The Grease Pencil provides the tools.

As always, there are more ways than one to achieve a result and 2D Animation is no exception. In this supplement Animation with Strokes will be discussed but be aware that you can also perform 2D Animation by animating Layers on which shapes are drawn in conjunction with Armatures (Supplement 10).

No matter what method is employed to create an animation it's best to create a clean drawing slate. Start a new Blender file and delete the default Cube from the 3D window. In the **Properties Panel, Display tab**, uncheck, Grid Floor and cancel the display of the X axis and Y axis (Figure 9.1).

Park the Camera off to the side out of view.

Change the **Timeline window** to the **Dope Sheet window** and place it in **Grease pencil mode** (Figure 9.2).



Dope Sheet Window

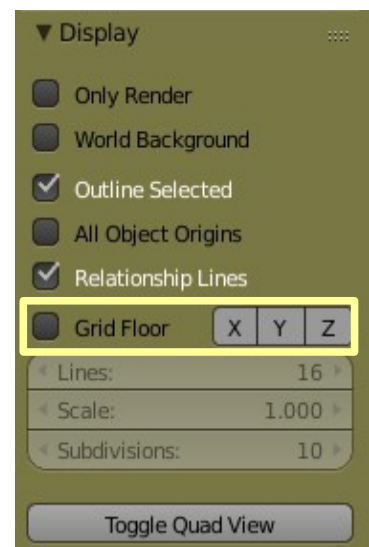


Figure 9.1

If you intend creating a lot of 2D Animation you should set up a dedicated Blender file with a Screen arrangement designed for the purpose. How to do that is detailed in Supplement 11 but for now, all you want to know is how to animate Strokes (your drawings).

On the clean drawing slate, draw a stick figure (Figure 9.3). In the **Tool Panel, Grease Pencil tab** have **Data Source: Scene** and **Stroke Placement: Cursor** selected.

Remember, when you click **Draw**, a new Grease Pencil Datablock and a new Grease Pencil layer are automatically created. You will see these indicated on the **Dope Sheet Summary** and observe two diamonds on the green line cursor in the Dope Sheet Timeline (Figure 9.4 over).

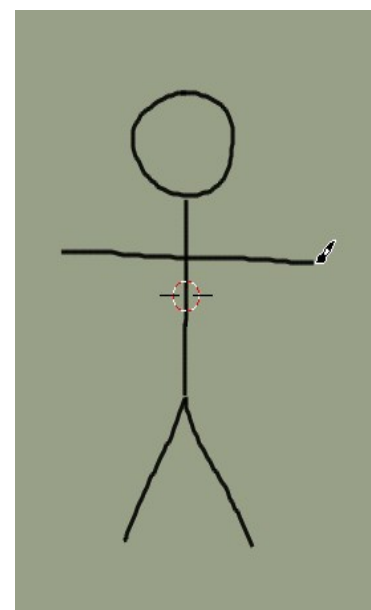
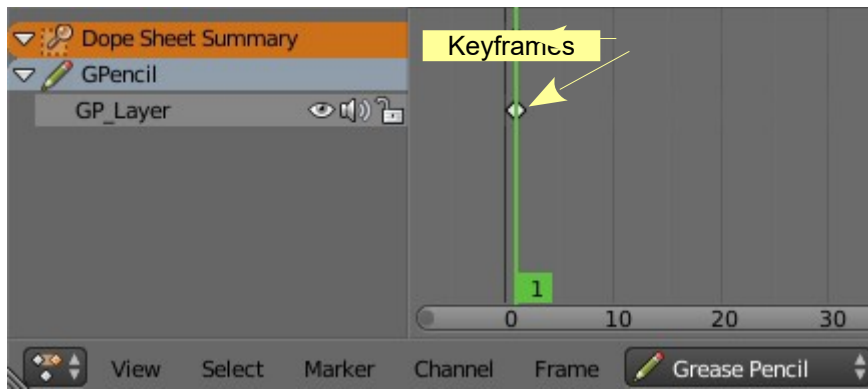


Figure 9.3



Dope Sheet Summary

Figure 9.4

The diamonds indicate **Keyframes** in the animation and as shown, they are on **Frame 1**.

Also, when you click **Draw** to draw Strokes creating the stick figure, the **Grease Pencil Layers** tab, in the Properties window expands and the **Grease Pencil Colors** tab displays.

### The Animation Process

A simple form of animation is to draw a figure in slightly different poses on separate pages in a flip book. When the pages are flipped you see the figure animated. The pages may be considered as Frames in the animation.

Early animations were produced by drawing each pose on a clear transparent celluloid sheet. The pose was duplicated and slightly altered by tracing one sheet (Frame) from another. Each sheet was photographed then the images were displayed in quick succession to create the animation.

You are about to perform a similar process on your computer screen by redrawing the stick figure in the 3D window in different poses. Visualise you are drawing each Frame in the animation.

### Onion Skinning

To assist in redrawing replicating tracing you may use **Onion Skinning**.

In the Grease Pencil Layers tab check, **Onion Skinning**. Note the default green color.



Figure 9.5

With **Onion Skinning** activated (Figure 9.5), you will be able to see Strokes that have been drawn on other Frame in your animation.

Figure 9.7 shows a circle Stroke as it displays at Frame 21 in a series of Frames (Frame 1 to Frame 40).

Setting a **Before** value displays the green outlines before the current Frame 21. Setting an **After** value displays the blue outlines after Frame 21.

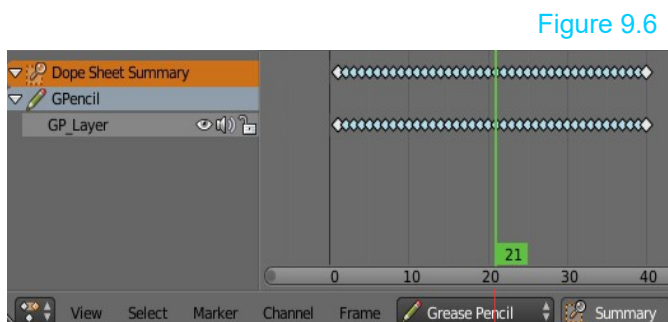


Figure 9.6

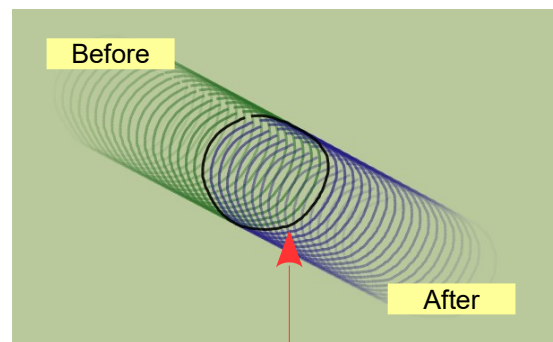


Figure 9.7

Frame 21 Black Outline

## Animation

Having drawn the stick figure at Frame 1, in the Dope Sheet window drag the Cursor (vertical green line) to Frame 10 or just click LMB on Frame 10.

To redraw the figure click **Draw** in the Tool Panel, Grease Pencil tab. Immediately the existing figure fades to the color in the Onion Skinning panel and your 3D window cursor becomes a brush (Figure 9.8, 9.9).

**Note:** With Onion Skinning Before and After values of 0 you will only see the outline of the figure drawn on the previous frame, in this case as drawn on Frame 1.

Trace over the figure drawing the limbs in a different pose (Figure 9.10). Click on Frame 20 and repeat the tracing operation (Figure 9.11).

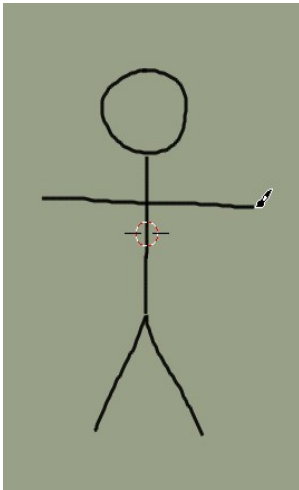


Figure 9.8

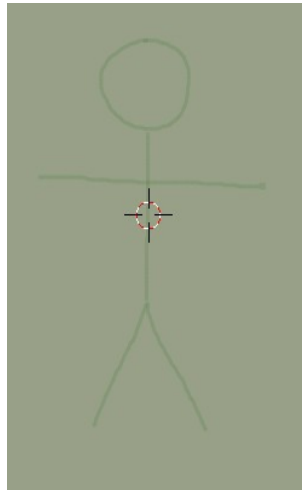


Figure 9.9

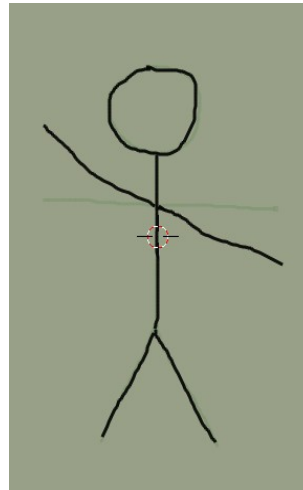


Figure 9.10

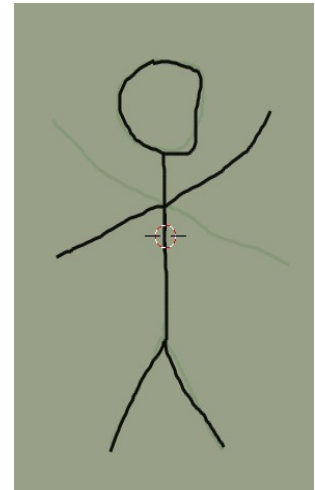
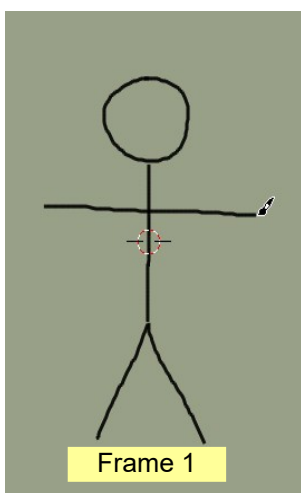


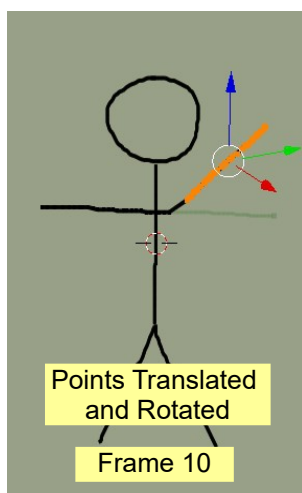
Figure 9.11

The Onion Skin shows you the stick figure as drawn in the previous Frame.

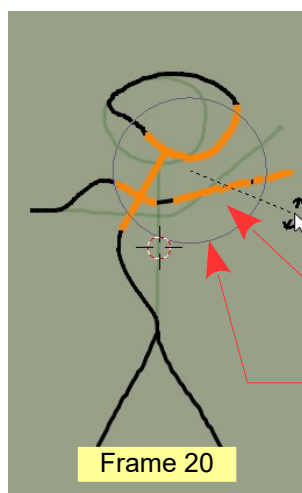
Dragging the cursor in the Dope Sheet window shows the animation. At this stage the animation is jerky, jumping from frame 1 to frame 10 to frame 20. The tracing process is long and tedious, therefore, use **Edit Strokes mode** to speed things up. After drawing the stick figure on Frame 1 change the 3D window to **Edit Strokes** mode. Move the Dope Sheet cursor to Frame 10. Select Control Points, Rotate and Translate. Move to frame 20.



Frame 1



Frame 10



Frame 20

Select Control Points, this time with; **Proportional Editing** activated.

Manipulate the selected points.

Selected points Rotated

Circle Selection

Figure 9.12

Following each manipulation procedure, Keyframes are added to the Dope Sheet Timeline panel (Figure 9.13).

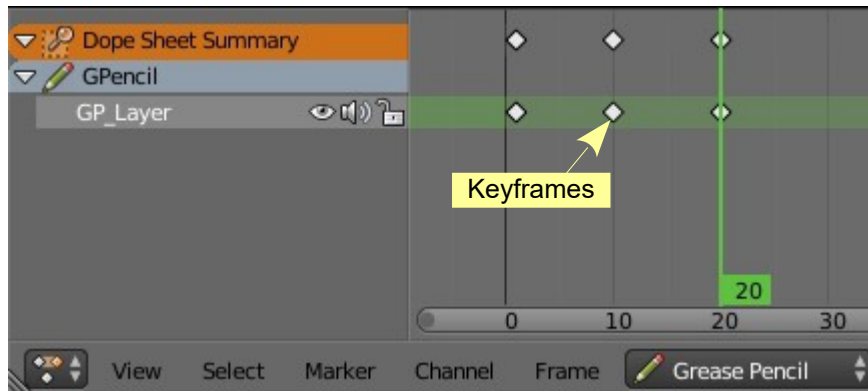


Figure 9.13

Again, playing the animation produces a jerky sequence since Strokes at Frame 1 display until Frame 9 then change at Frame 10 and similarly from Frame 10 to 19 when they change at Frame 20. To produce a smoother transition you will have to draw Strokes at intermediate Frames.

There is much more to learn about Grease Pencil Animation and it is well worth checking out the video tutorials on Youtube **BUT** be aware the Blender developers are working on a new tool set which will revolutionize the Grease Pencil workflow.

Check out this tutorial; <https://www.youtube.com/watch?v=VWvEdPWxhHY>

Supplement 10 shows you how to animate a figure using Armatures which allows infinite control over movement by modifying **F-Curves**.

Before attempting Grease Pencil Armature animation it is advised that you understand the application of Strokes and Colors and the association with Layers as detailed in Supplement 08.

### Intermediate Frames

In Figures 9.6 and 9.7 intermediate Frames in an animation between Frame 1 and Frame 40 were shown.

Tracing a new Stroke at each Frame would be a long and tedious process, therefore, a shortcut tool has been incorporated in the Grease Pencil.

**Note:** This method appears to be limited to fairly simple shapes.

To demonstrate draw a circular Stroke in the 3D window at Frame 1 in the Dope Sheet window (Figure 9.14).

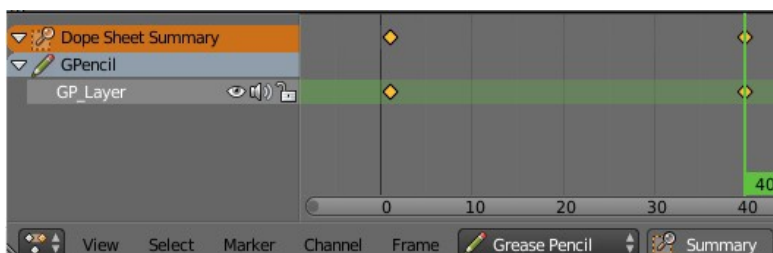
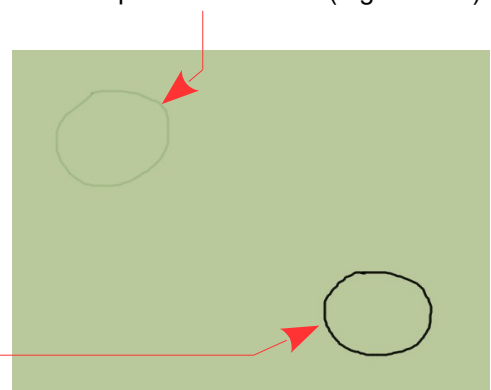


Figure 9.14



Draw the Stroke again in a different location at frame 40.

Scrubbing the Dope Sheet cursor between frames shows the circle jump from one location to the other.

The circle remains at Frame 1 position until Frame 39 then jumps to the second position at frame 40.

In the **Grease Pencil Properties** panel turn on (check) **Onion Skinning** and enter Before and After values (Figure 9.15)

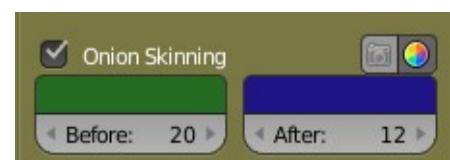


Figure 9.15

In the Dope Sheet window (in Grease Pencil mode) place the timeline cursor (vertical green line) somewhere between Frame 1 and frame 40 (Frame 30, Figure 9.16).

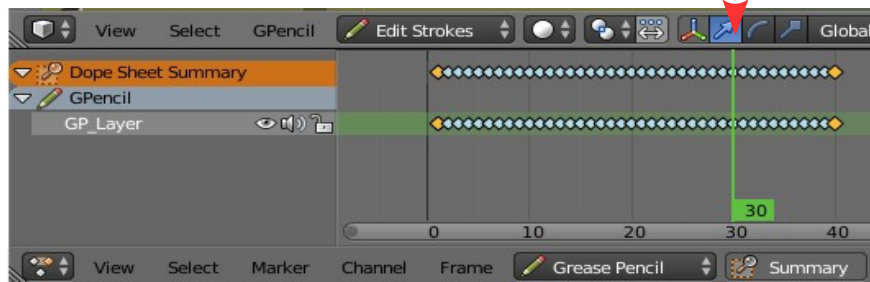


Figure 9.16

In the **Tool Panel, Grease Pencil tab**, open the **Interpolation tab** (Figure 9.17).

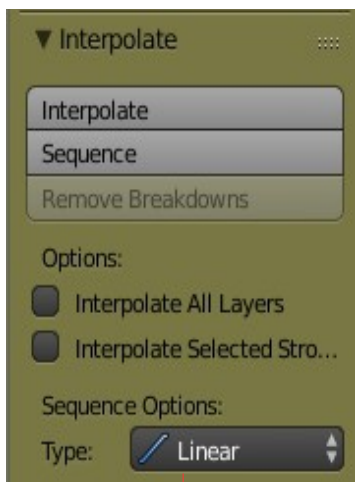


Figure 9.17

**Note:** The Interpolation tab does not display in the Tool Panel until a Stroke has been drawn in the 3D window.

Click on **Sequence**. Keyframes are automatically generated between the Keyframes either side of the cursor.

With Before and After values set in the Onion Skinning tab you will see the Stroke profile replicated before and after the Stroke which appears at Frame 30 (Figure 9.18).

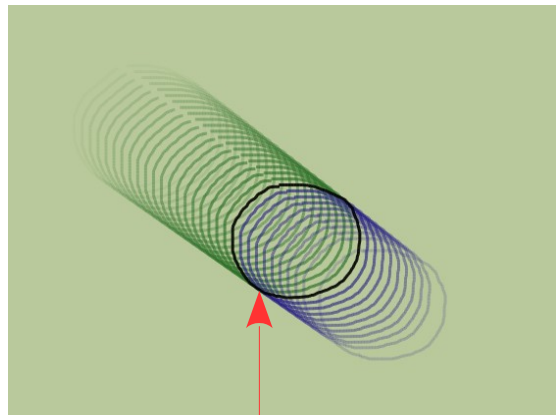


Figure 9.18

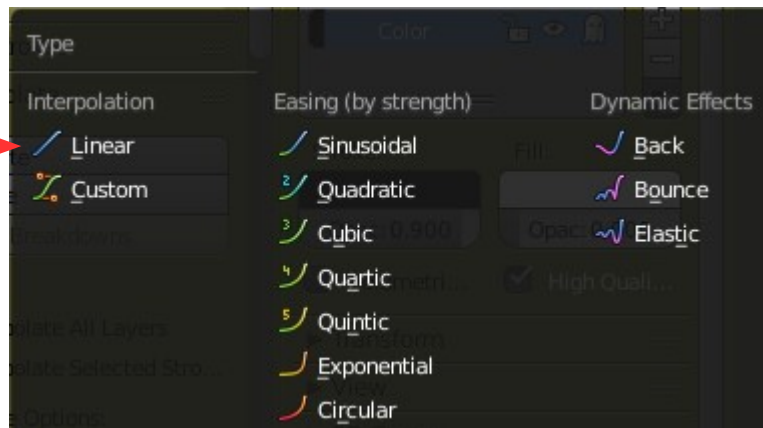


Figure 9.19

**Note:** In the Interpolation tab the **Sequence Options: Type** is **Linear**. Click in the Type panel to display other Option Types (Figure 9.19).