
Growing Grass Logo

Paint Effects is Maya's flexible system for interactively painting brush strokes and particle effects on a 2D canvas or on 3D geometry. Preset brushes such as plants, hair, fire, feathers, and others can be used to get amazing effects quickly.

This tutorial explains how to create a Maya logo out of growing grass. The focus is on setting and animating the Paint Effects brush and strokes.

The following topics are discussed:

- Brushes vs. Strokes
- Assigning brushes to a stroke
- Changing brush parameters
- Loading brush settings into the template brush
- Making multiple strokes share a single brush
- Animating the growth of the grass along the strokes
- Using the same strokes with other brushes



Note: **Before you start:** This tutorial requires Maya scene files. If you haven't installed the tutorial files go to the "Try Maya" section of the "Taste of Maya" CDROM to install.

Starting Maya: You can start Maya by double-clicking the **Maya 2.5 Evaluation** icon on the desktop or from **Start → Programs → Maya 2.5 Evaluation → Maya**.

In Maya: Once the tutorial files have been installed you will need to set the current project in order to access the Maya scene files. To set the current project from within Maya select **File → Project → Set...** and Navigate to the directory where you installed the Maya scene files. Select the directory: *Maya_tutorial_data* and press **OK**.

Growing Grass

To create the animated grass, you will apply paint effects strokes to NURBS curves. Then, a preset brush will be applied to all of the strokes and keyframes will be set to make the grass grow along the strokes.

Stroke: A curve attached to an underlying NURBS curve (or curves). The underlying NURBS curve defines the shape and direction of the stroke's painting path.

Brush: The attribute settings that define the appearance and behavior of a stroke.

Once you have the animation on the strokes, you can change the brush to anything you want (for example, a neon, hair, or liquid style brush).

Assigning the brush to the curves

1 Open scene file and playback

- **File → Open;** select *mayaGrass_start.ma*

This file contains several NURBS curves, a pre-made paint effects brush, and some lighting.

- **Playback** and watch the grass on the M grow. In the following steps, you will complete the logo by making grass grow on the other letters.

2 Load the settings of the supplied brush into the template brush

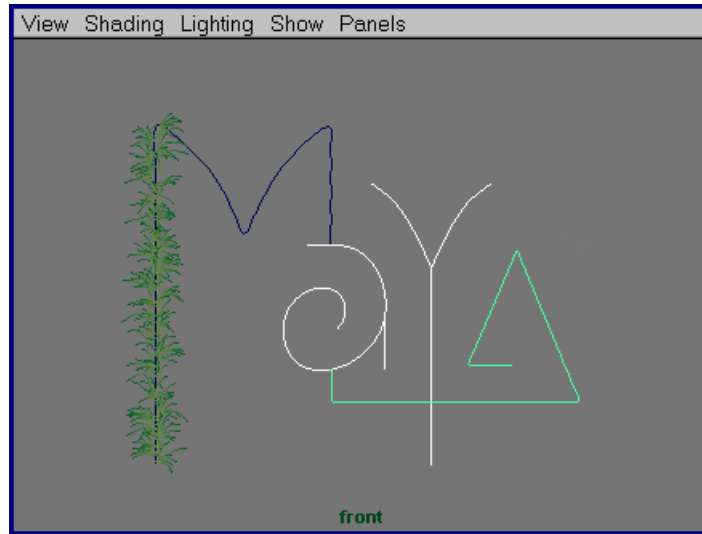
Since you are going to apply the same brush used on the M to the rest of the letters, you need to store the settings of the animated grass brush used on the M for easy access.

- Select *stroke1* in the Outliner
- Press **F5** to enable the rendering menu set
- **Paint Effects → Get Settings from Selected Stroke**

This is like a copy/paste operation. Maya copies all the attributes from the stroke (including the brush properties that belong to that stroke) and stores them in a "template brush".

3 Create strokes and apply the template brush settings

- Drag select in the modeling window so the curves for the remaining letters of the Maya logo are highlighted as shown

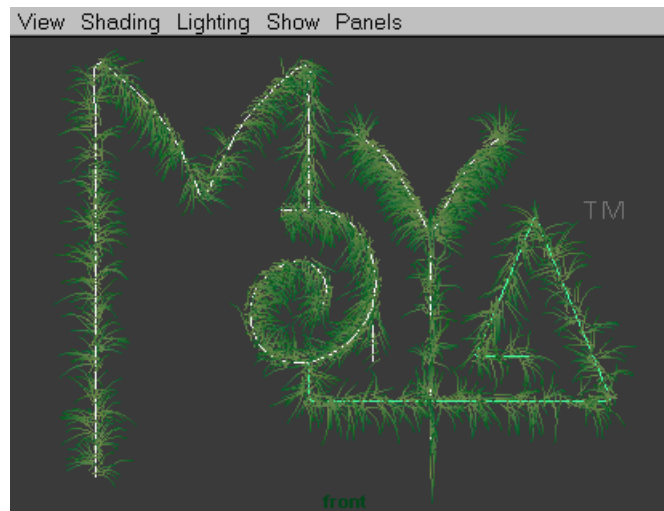


Selected curves prepared to add brushes

- Choose **Paint Effects** → **Curve Utilities** → **Attach Brush to Curves**
The settings stored in the template brush are applied.

4 Playback and view

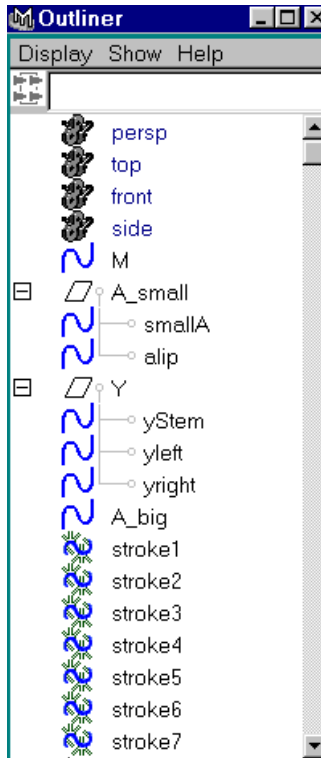
- Rewind and press play on the timeline. The grass grows on all the letters.



The grass brush applied to the entire logo

5 Look at the Outliner and Attribute Editor to see what was built

- Look in the Outliner to see the newly created strokes



Outliner showing one paint effects stroke for each NURBS curve in the logo

- Look in the Attribute Editor (**Windows** → **Attribute Editor**) to see how the strokes and brushes are related (look at the tabs at the top of the Attribute Editor)
- The scene file *mayagrass_withstrokes.ma* has been set up to include the strokes and applied brushes for you up to this point.

Changing the look and motion of the grass

The Grass brush that you attached to the strokes is one that already had some values defined. You can now modify those values to your own liking.

1 Set up Brush Sharing

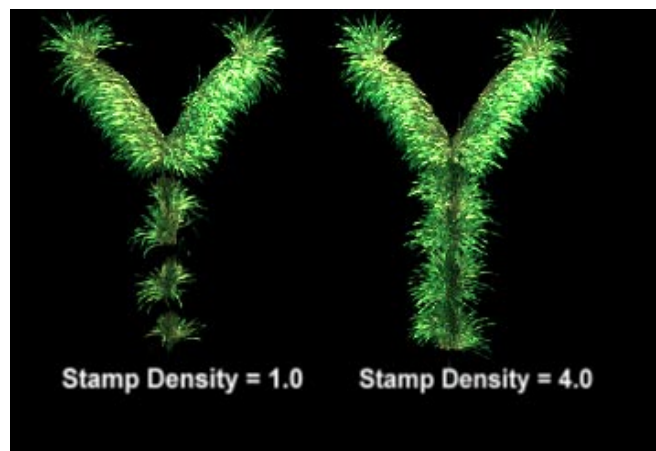
If you use the Attribute Editor to change some brush settings on *stroke1* then select *stroke2* and change its brush settings, you'll notice that the attributes on the two brushes are changed independently. This is fine if you want different brush control on each letter. In this case, you want the same brush for all the letters so everything looks consistent and can be changed from one place. To do this, you need to share one brush among the many strokes.

- Select all seven strokes in the Outliner
- **Paint Effects** → **Share One Brush**
This shares the brush of the last selected stroke in the selection list to all of the other selected strokes.
- Now when you change any brush attribute, all letters update to reflect that change.

2 Modify stroke density for the Y stem

The stem of the Y is a little sparse and could be filled in with a little more grass. This can be easily seen if you advance to frame 100. You can change the sample density on the stroke for the y stem only to help fill this in.

- Use the Outliner to select only the stroke for the stem of the Y
You can find the stroke for the stem of the Y by clicking on each of the strokes listed in the Outliner and watching for the stem of the Y to become highlighted in your camera viewport.
- At the top of the Attribute Editor click on the “strokeShape” tab for the stroke
- Set **Sample Density** of this stroke to 1.5 in the Attribute Editor
- Although the brushes are shared, the strokes are still independent from one another.



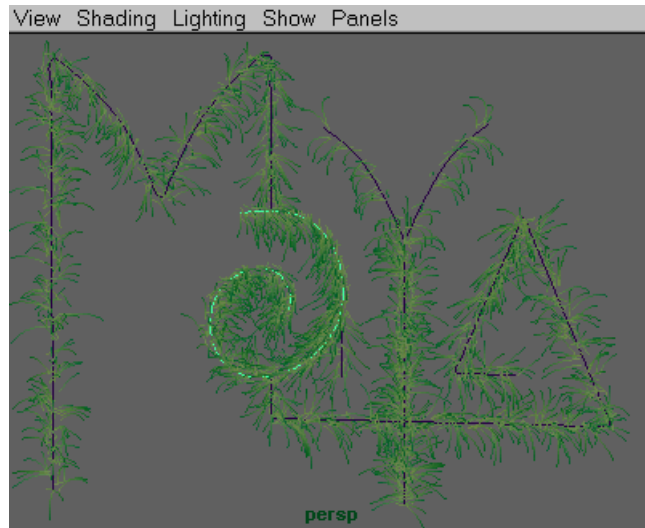
The same stroke with two different stamp densities

ANIMATE STROKE LENGTHS

Currently, the grass all grows in evenly across the 3 letters you have done. The next step is to animate the length of each stroke so the grass appears to climb along the letter.

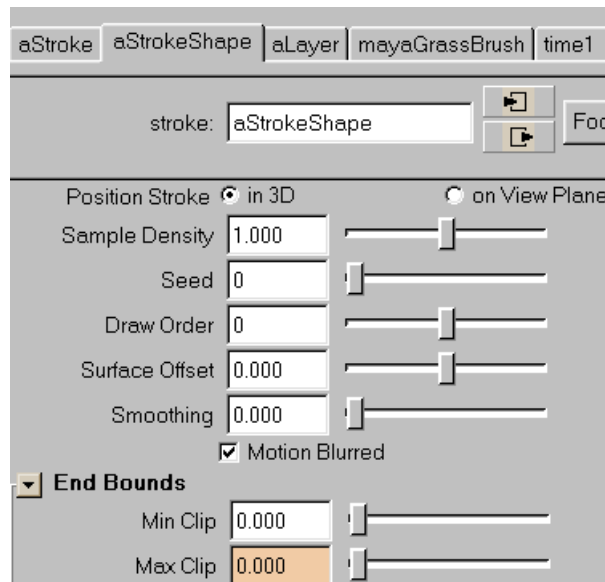
1 Animating the length of the small “a” strokes

- Select the stroke for the curly “a” (not the stem of the a though)



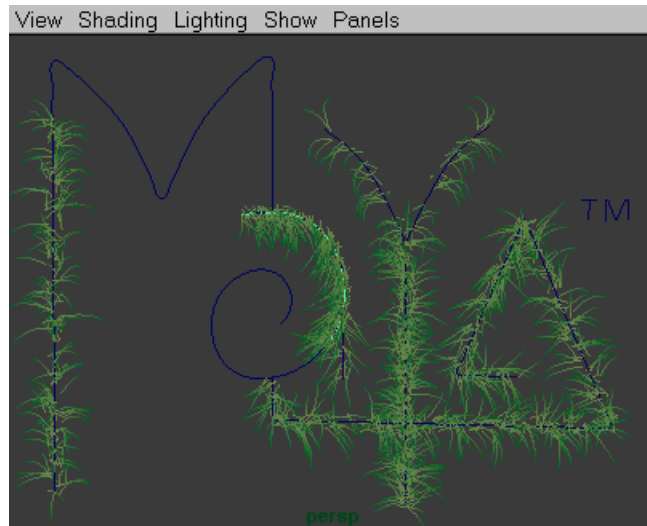
Selecting only the “a” stroke

- At the top of the Attribute Editor click on the “shape” tab for the stroke
- Locate the **Max Clip** attribute (within End Bounds section)
- Drag the Max Clip slider back and fourth between **0** and **1** to see the length of the stroke change in the modeling window.
- Rewind to frame **1**, set **Max Clip** to **0** and **RMB** (right mouse button) click on the Max Clip input field and choose **Set Key**



Max Clip keyed on the shape node of the “a” stroke

- Advance to Frame **100**, set **Max Clip** to **1** and set another keyframe.
- Playback to see the grass grow along the letter.

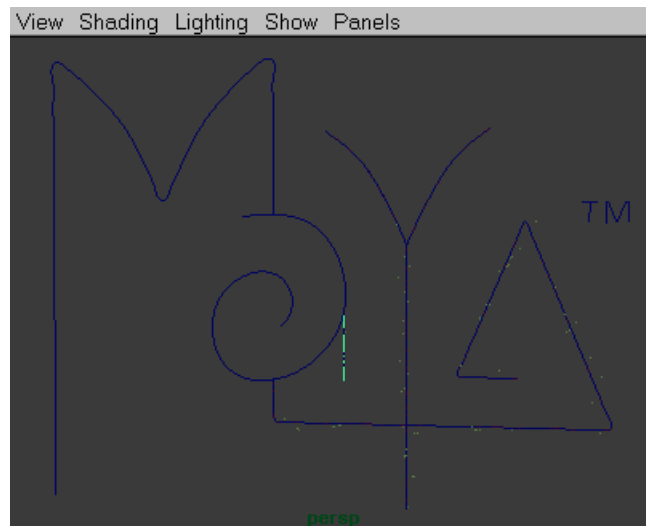


Frame 40: Grass growing around the small “a”

2 Key the growth of the stem

The small “a” has a stroke associated with the stem as well. This should start to grow as the animation of the main stroke for the “a” gets close to the stem.

- Use the Outliner to select the stroke associated with the stem of the “a”.



Selecting only the a “stem” stroke

- Advance to frame **32**, set **Max Clip** to **0** and set a keyframe
- Advance to frame **100** set **Max Clip** to **1** and set a keyframe.

3 Repeat for the remaining strokes.

Now, continue this process with the other strokes, keyframing the Max Clip between 0 and 1 as shown below. Or, open the completed file called *mayaGrass_final.ma*

Y “stem” stroke

- Max Clip: 0 at frame 1
- Max Clip: 1 at frame 75

Y “branch” strokes

- Max Clip: 0 at frame 74
- Max Clip: 1 at frame 100

Pointed “A” stroke

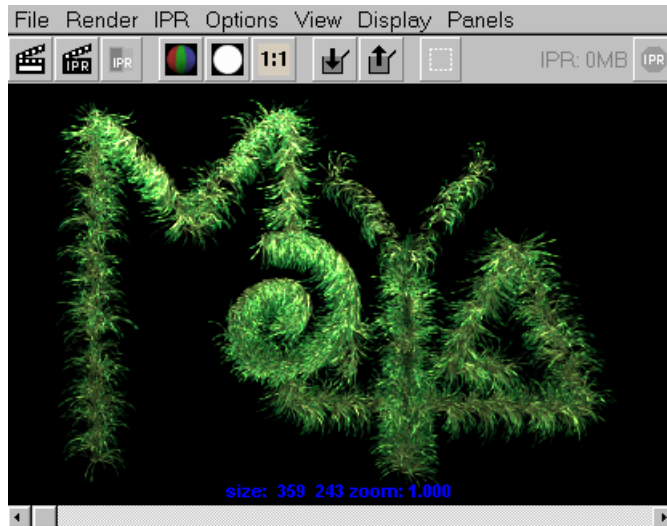
- Max Clip: 0 at frame 1
- Max Clip: 1 at frame 100

4 Playblast to get a rough idea of motion

- Set your time slider range to 1, 150
- Click in the perspective view
- Open **Window** → **Playblast** -
- Press **Reset** then press **Playblast**

5 Render a frame

- Advance to frame 150
- **Window** → **Rendering Editors** → **Render View**
- **Render** → **Render** → **Persp**



A test render in the Render View window

Dealing with unwanted “creeping”

You may notice that the tips of the “a stem” and “y stems” seem to start growing away from the curve before the grass reaches them. This can be corrected by making the “a stem” and the two “y stems” share their own separate brush. Then, on that brush set the start time in the flow animation section to 1 to prevent this creeping. This is not a requirement, just something that will prevent the first frame from having grass in unwanted areas.

Adding a different brush to the same strokes

Now that you have set up the animation on the strokes, you can begin experimenting with different brushes. Think of this as trying different kinds of paint.

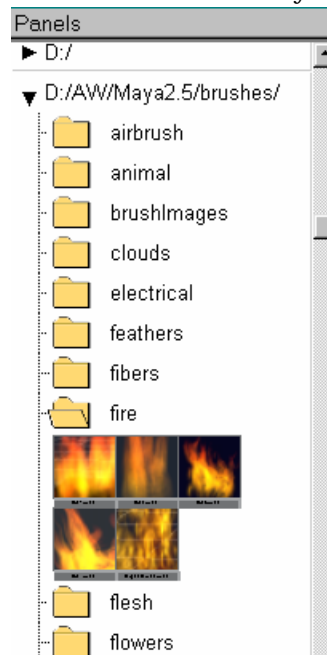


1 Select a new brush from the Visor

- Continue on from the last step or open *mayaGrass_newBrush.ma*

This file still has the grass applied to it, you will switch the grass brush to a fire brush so Maya is written in fire.

- In the Visor Window (**Windows** → **Visor**) locate the brushes directory. Inside that directory locate the **fire** directory. **MMB** drag one of the fire brushes to your shelf (fire4 works well).



Fire Brushes in the Visor

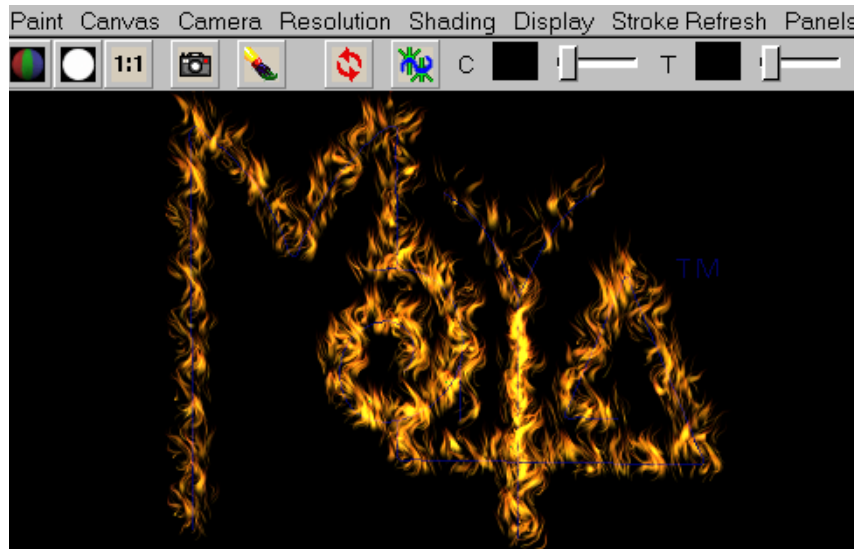
2 Apply the fire brush to the strokes

- Use the Outliner to select all the strokes of the logo
- Click the fire brush you dragged to the shelf
- **Paint Effects** → **Apply Settings to Selected Strokes**

Note: This copies the settings from the brush you selected into the brush that is applied to the strokes. However, the name of the brush will still be called *grassBlow1* unless you rename it in the Attribute Editor

3 Change shading mode and adjust global scale

- **MMB** click in the persp window to set focus in that window
- Press **8** to display the Paint Effects Window
- Select any stroke, in the Outliner then open the Attribute Editor.
- Click the *grassBlow1* tab at the top of the Attribute Editor and set **Global Scale** to **50**
- If you want to see a more detailed version in the Paint Effects window choose **Stroke Refresh** → **Rendered**



Fire Brush in Paint Effects window with Stroke Refresh set to Render

- Experiment with other attribute settings or other brush presets to get the look you want.
- The scene *mayaLogo_Fire.ma* contains a finished version of the fire logo.

Tip: If the refresh is too slow, you can set stroke refresh to wireframe, or select all the strokes and lower the **displayPercent** attribute in the Channel Box.

CONCLUSION

You have now worked through a typical Paint Effects session in Maya and have seen the interactiveness and flexibility of this part of Maya. To recap, the following were the key topics in this tutorial:

- Strokes and Brushes defined
- Assigning brushes to a stroke
- Changing brush parameters
- Making multiple strokes share a single brush
- Animating the growth of the grass along the strokes using Max Clip.
- Using the same strokes with other brushes