

Better workflow for a 2D/3D Camera Setup For Your Film

A Technical Paper by Kelvin Nguyen

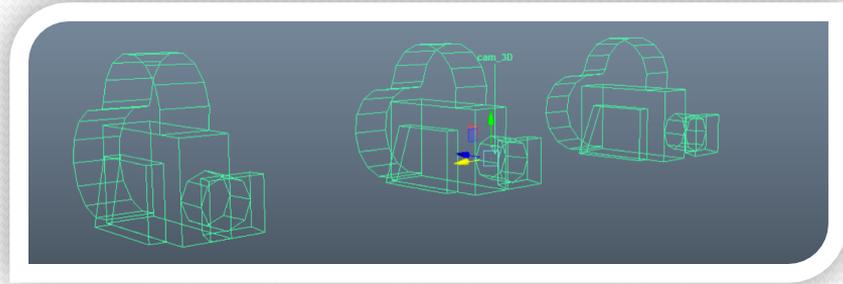
OPENING

You can actually render and view from a *stereoCam* by going into your 3D camera rig and from selecting whatever camera you would like to see from (usually the center camera).

However, for the ease of comfort considering the pipeline, here is a powerpoint on controlling both a 2D camera and a 3D camera at the same time in Maya. You can also follow these steps to convert an existing animated 2D camera into a 3D camera.

Creating the Cameras

- Create a basic camera
 - Name *cam_2d*
- Create a stereo camera
 - Name *cam_3d*
 - Stereo cameras create 3 cameras controlled by one main stereoCam_rig
 - *CenterCamShape*
 - *StereoCameraLeft*
 - *StereoCameraRight*
 - Both cameras should be on top of each other
- Group both cameras and name the new camera, “*camGrp*”



Connecting Camera Attributes

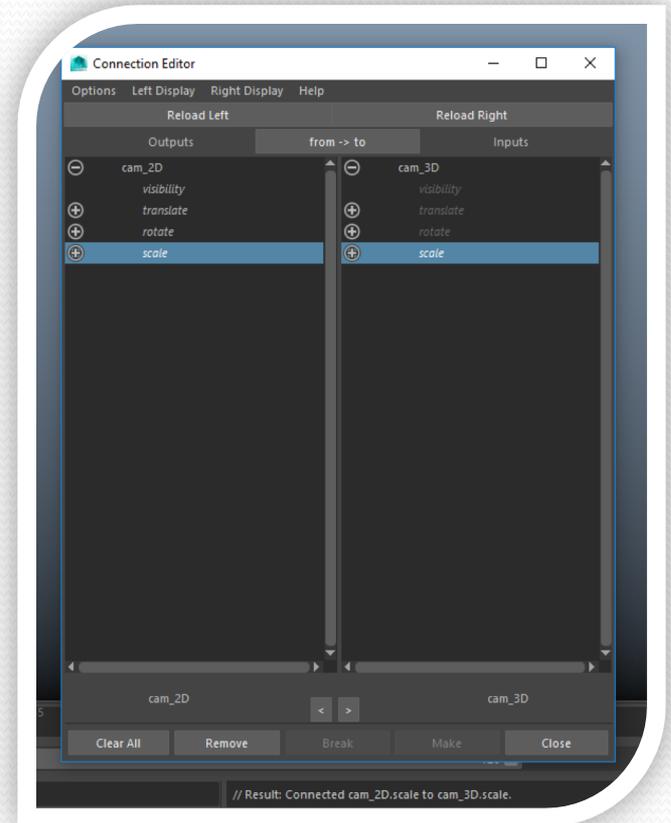
Open the **Connection Editor** by going into *Windows > General Editors > Connection Editor*

Click **cam_2D** on your outliner, and then click “**Reload Left**” in the Connection Editor

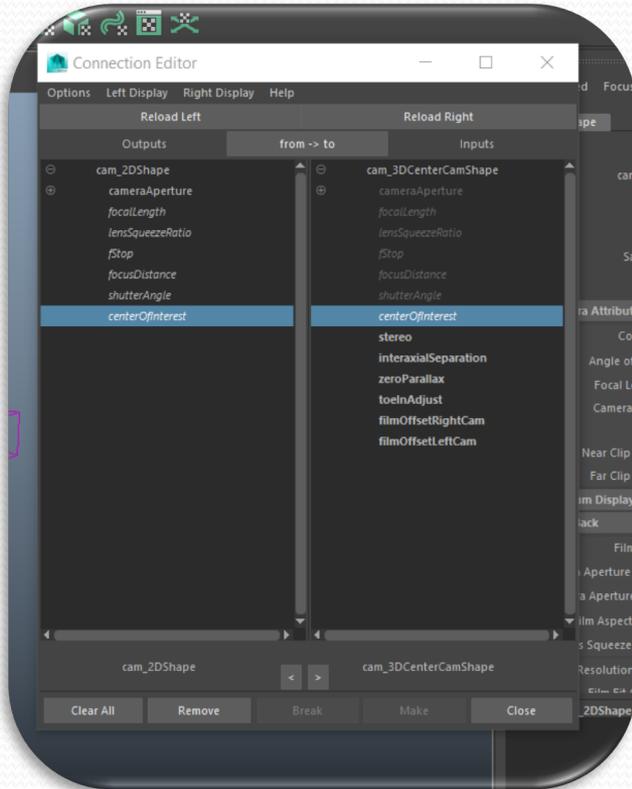
Click **cam_3D** on your outliner, and then click “**Reload Right**” in the Connection Editor

Click and match all attribute names **EXCEPT** **visibility**.

- Now both cameras should be able to do the same basic movements.



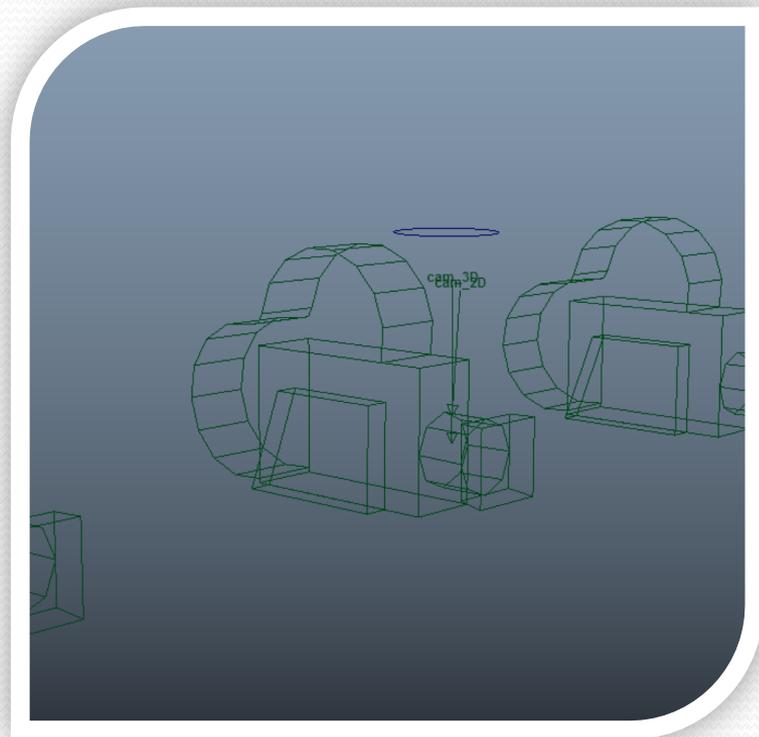
Connecting Camera Attributes



- Click “*cam_2DShape*” on your outliner, and then click “*Reload Left*” in the *Connection Editor*
- Click “*cam_3DCenterCamShape*” on your outliner, and then click “*Reload Right*” in the *Connection Editor*
- Click and match all attribute names applicable
- Now almost every attribute of both cameras will be exactly the same no matter how much you change them.

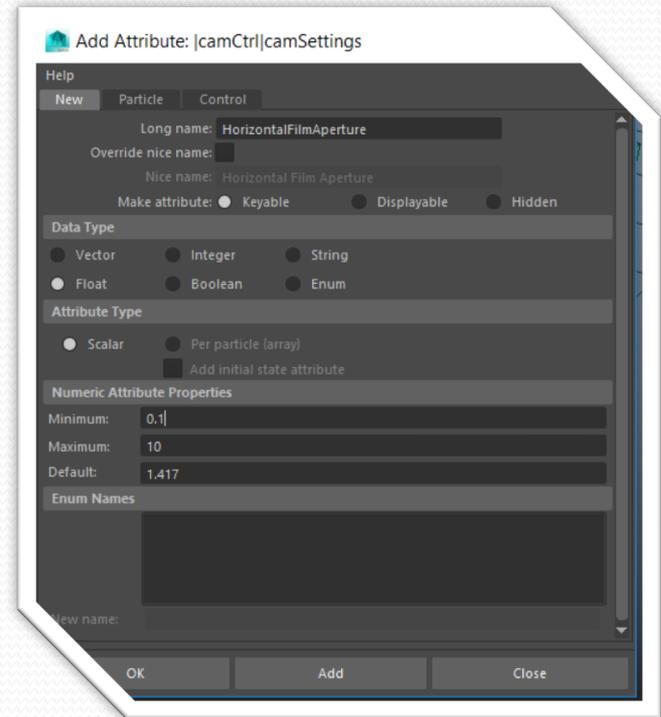
Using a Nurbs Curve for Both Attributes

- It's a little annoying to click one camera or the other camera to control it's attributes, so we can create a little controller that contains all keyable attributes from both cameras.
- Create a **nurbsCircle** and move it just above the camera. If needed, you can resize it as well.
- Rename the nurbsCircle, "**camSettings**" and put it in the "**camCtrl**" group
- In the outliner, select **cam_2D** and **camSettings** (in that order). Go into the rigging menu set and under the "**Constrain**" menu set, click "**Parent**"
 - Now the camSettings will follow the camera.
- In **camSettings**, lock and hide **Scale X**, **Scale Y**, **Scale Z**, and **Visibility**. Hide, but don't lock, all translations and all rotates.



Using a Nurbs Curve for Both Attributes

- In the camSettings' Channel Box, click *Edit* and then click *Add Attribute*
 - Under Long name, type in ***HorizontalFilmAperture***
 - Make sure the Data Type is set to ***Float***
 - Under Minimum, type ***0.1***
 - Under Maximum, type ***10***
 - Under Default Value, type ***1.417***
- In the camSettings' Channel Box, click *Edit* and then click *Add Attribute*
 - Under Long name, type in ***VerticalFilmAperture***
 - Make sure the Data Type is set to ***Float***
 - Under *Minimum*, type ***0.1***
 - Under *Maximum*, type ***10***
 - Under *Default Value*, type ***0.945***



Using a Nurbs Curve for Both Attribute

- In the camSettings' Channel Box, click *Edit* and then click *Add Attribute*
 - Under ***Long name***, type in ***FocalLength***
 - Make sure the ***Data Type*** is set to ***Float***
 - Under ***Minimum***, type ***2.5***
 - Under ***Maximum***, leave it ***blank***
 - Under ***Default Value***, type ***35***
- In the camSettings' Channel Box, click *Edit* and then click *Add Attribute*
 - Under ***Long name***, type in ***LensSqueezeRatio***
 - Make sure the ***Data Type*** is set to ***Float***
 - Under ***Minimum***, type ***0***
 - Under ***Maximum***, leave it ***blank***
 - Under ***Default Value***, type ***1***
- In the camSettings' Channel Box, click *Edit* and then click *Add Attribute*
 - Under ***Long name***, type in ***fStop***
 - Make sure the ***Data Type*** is set to ***Float***
 - Under ***Minimum***, type ***1***
 - Under ***Maximum***, type ***64***
 - Under ***Default Value***, type ***5.6***
- In the camSettings' Channel Box, click *Edit* and then click *Add Attribute*
 - Under ***Long name***, type in ***FocusDistance***
 - Make sure the ***Data Type*** is set to ***Float***
 - Under ***Minimum***, type ***0***
 - Under ***Maximum***, leave it ***blank***
 - Under ***Default Value***, type ***5***

Using a Nurbs Curve for Both Attributes

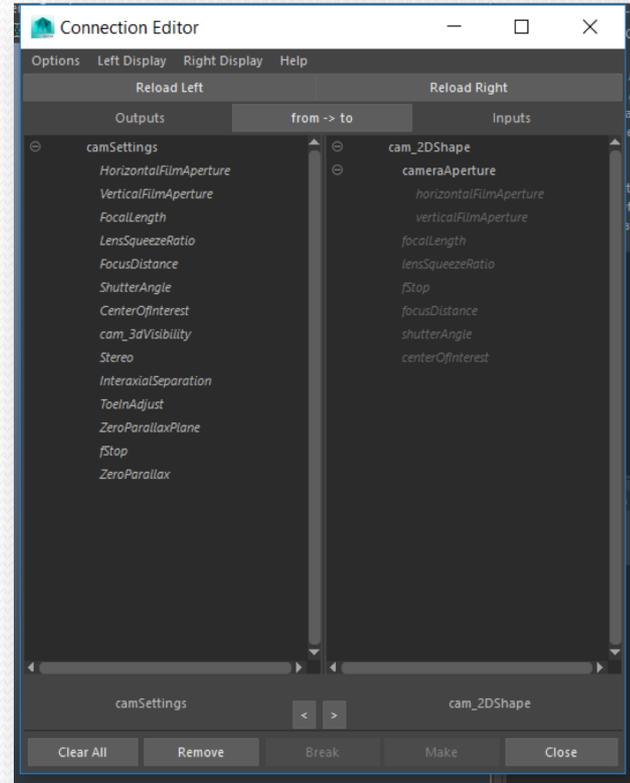
- In the camSettings' Channel Box, click *Edit* and then click *Add Attribute*
 - Under **Long name**, type in **ShutterAngle**
 - Make sure the **Data Type** is set to **Float**
 - Under **Minimum**, leave it **blank**
 - Under **Maximum**, leave it **blank**
 - Under **Default Value**, type **144**
- In the camSettings' Channel Box, click *Edit* and then click *Add Attribute*
 - Under **Long name**, type in **CenterOfInterest**
 - Make sure the **Data Type** is set to **Float**
 - Under **Minimum**, type **0**
 - Under **Maximum**, leave it **blank**
 - Under **Default Value**, type **5**
- In the camSettings' Channel Box, click *Edit* and then click *Add Attribute*
 - Under **Long name**, type in **cam_3dVisibility**
 - Make sure the **Data Type** is set to **Boolean**
- In the camSettings' Channel Box, click *Edit* and then click *Add Attribute*
 - Under **Long name**, type in **Stereo**
 - Make sure the **Data Type** is set to **Enum**
 - Under **Enum Name**, type
 - **Off**
 - **Converged**
 - **Off-Axis**
 - **Parallel**

Using a Nurbs Curve for Both Attributes

- In the camSettings' Channel Box, click *Edit* and then click *Add Attribute*
 - Under ***Long name***, type in ***InteraxialSeparation***
 - Make sure the ***Data Type*** is set to ***Float***
 - Under ***Minimum***, type **0**
 - Under ***Maximum***, type **20**
 - Under ***Default Value***, type **6.35**
- In the camSettings' Channel Box, click *Edit* and then click *Add Attribute*
 - Under ***Long name***, type in ***ZeroParallax***
 - Make sure the ***Data Type*** is set to ***Float***
 - Under ***Minimum***, type **0.001**
 - Under ***Maximum***, leave it **blank**
 - Under ***Default Value***, type **254**
- In the camSettings' Channel Box, click *Edit* and then click *Add Attribute*
 - Under ***Long name***, type in ***ToeInAdjust***
 - Make sure the ***Data Type*** is set to ***Float***
 - Under ***Minimum***, type **0**
 - Under ***Maximum***, leave it **30**
 - Under ***Default Value***, type **0**
- In the camSettings' Channel Box, click *Edit* and then click *Add Attribute*
 - Under ***Long name***, type in ***ZeroParallaxPlane***
 - Make sure the ***Data Type*** is set to ***Boolean***

Connecting camSettings to Cameras

- Open the **Connection Editor** by going into **Windows > General Editors > Connection Editor**
- Click **camSettings** on your outliner, and then click “**Reload Left**” in the **Connection Editor**
- Click **cam_2DShape** on your outliner, and then click “**Reload Right**” in the **Connection Editor**
- Click and match all applicable
- Do the same with **cam_3DCenterCamShape** in the **Inputs** menu.



Connecting camSettings to Cameras

- Click *cam_3D* on your outliner, and then click “*Reload Right*” in the *Connection Editor*
- In the *Outputs* menu click *cam_3dVisibility*, in the *Inputs*, click *visibility*
- In your outliner, hide *cam_3DCenterCamShape*
- Now you should be able to select the center camera (*cam_2D*) to control the scale, translation, and rotation of both cameras and the camSettings to control the other miscellaneous attributes.

