



Houdini First Steps

M07 - Camera & Lights



Agenda - Camera

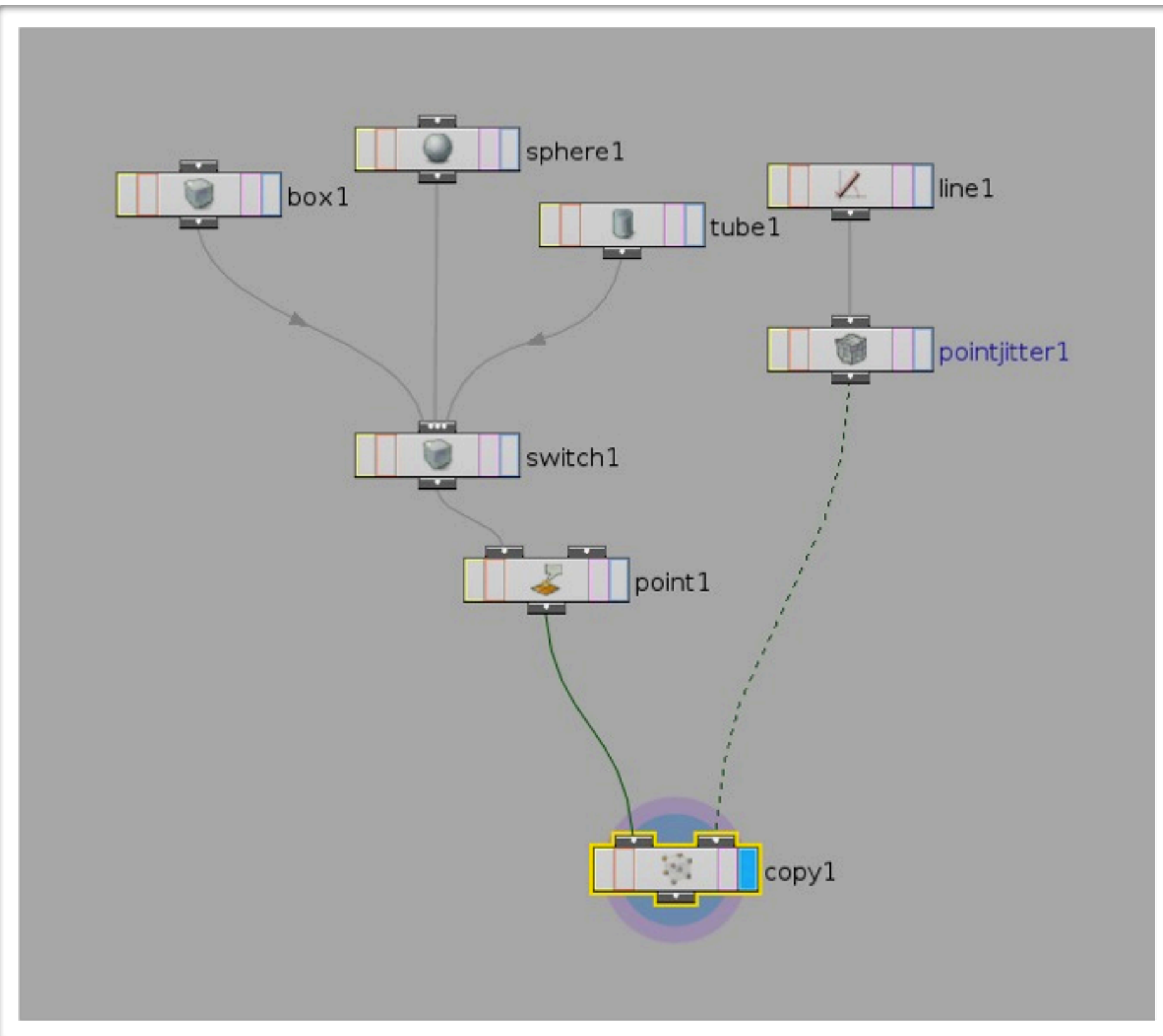
- **Creating the Camera Test Bed**
- **Camera Shelf Tool**
 - Locking down the camera
 - Camera Options by Right Mouse clicking on Camera icon in Scene viewport
 - Parameter Options
- **Switcher Object**
 - Setting Up
 - Rendering
 - Keyframing
- **ROPNET using Switcher Camera**
- **Stereo Camera**



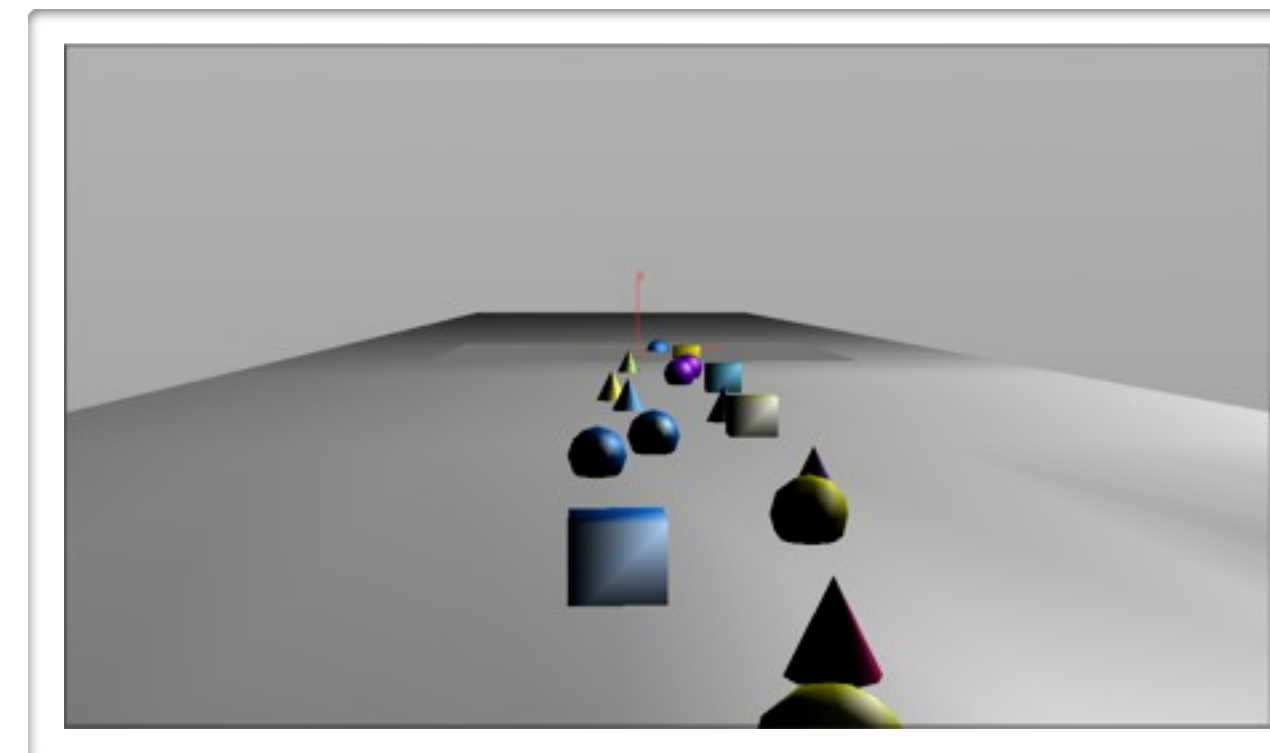
Agenda - Lights

- **Point**
- **Spot**
- **Area**
- **Geometry**
- **Distant**
- **Sky Light**

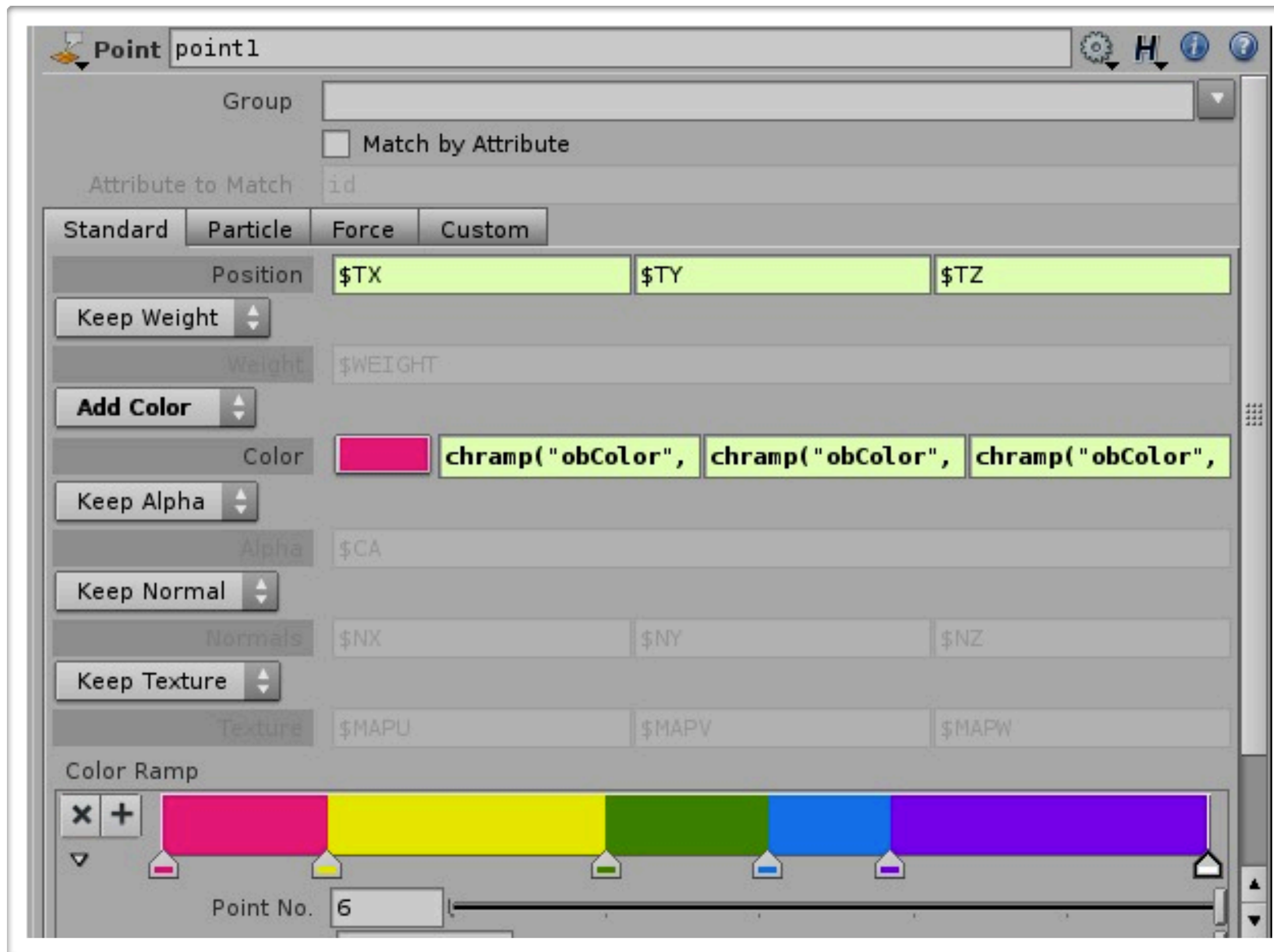
Camera Test Bed



- ▶ Need a test bed to learn about camera parameters
- ▶ Use Point Jitter to Scatter Points of line in X - direction
- ▶ Use Parameters in COPY SOP to randomize geometry being copied on to points via SWITCH SOP
 - ▶ $shNum = \text{floor}(\text{rand}(\$PT * 1234) * 3)$

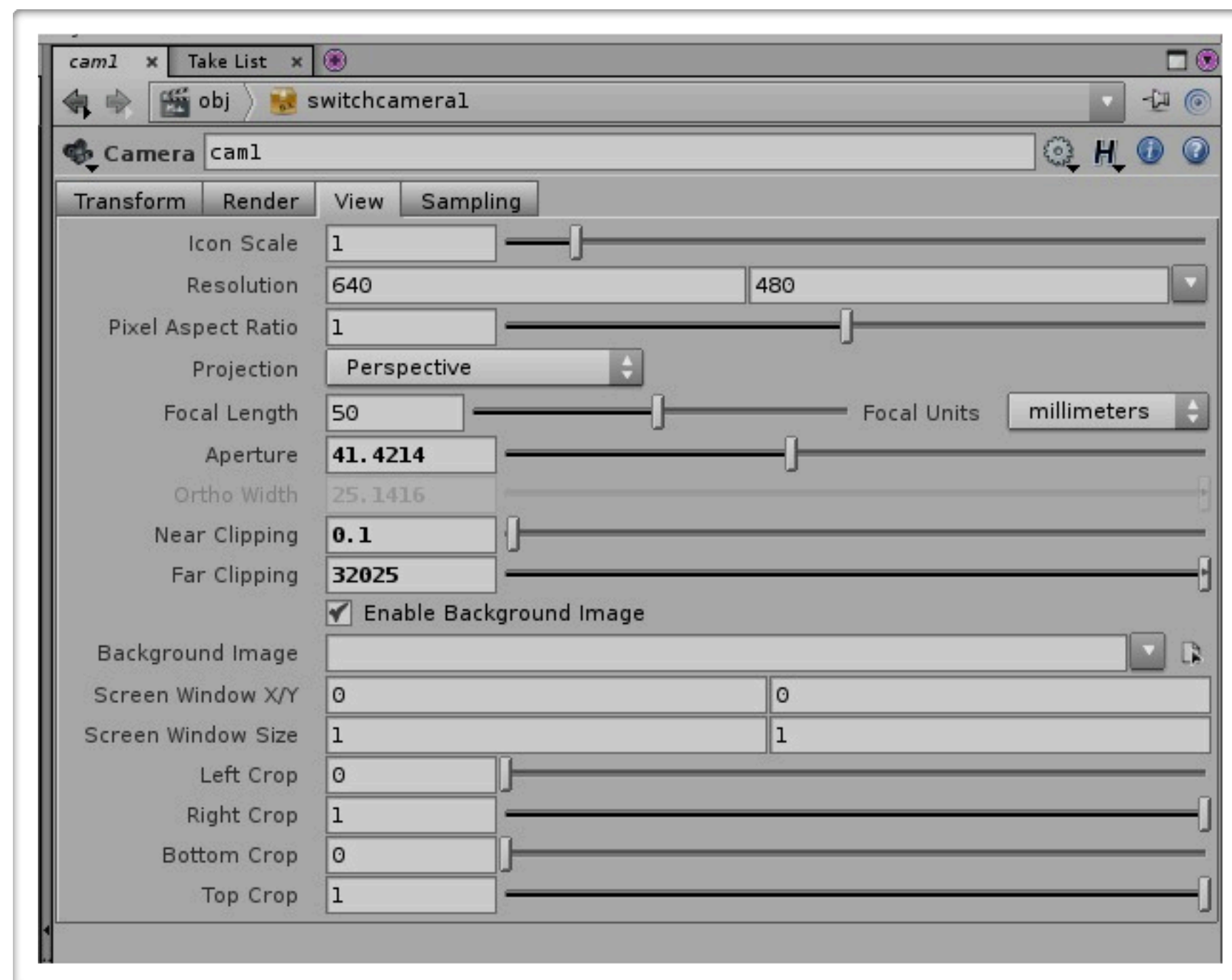


Camera Test Bed - cont.



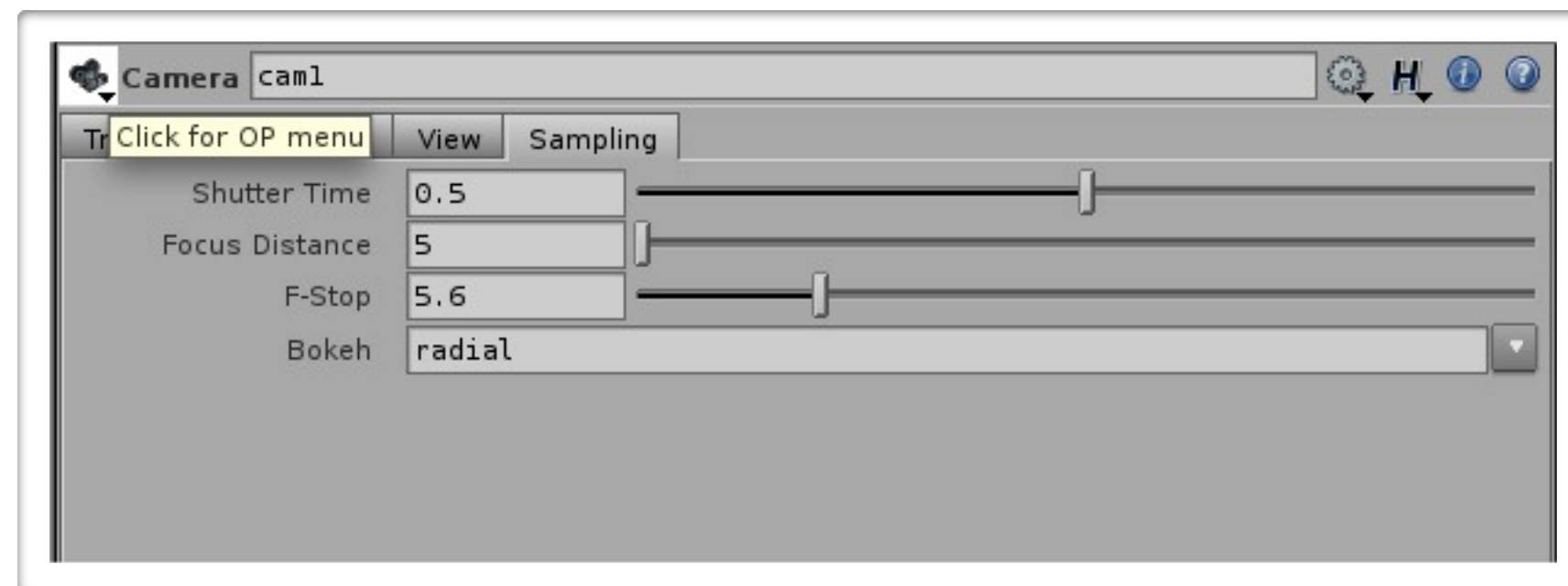
- ▶ Create a spare parameter in the POINT SOP
 - ▶ Make is a COLOR RAMP
- ▶ Add Color and drive the color using the ramp
 - ▶ In copy create a stamp var: `clNum = rand($PT*431)`
 - ▶ `chramp("obColor",stamp("../copy1", "clNum",0),0)`

Setting up the Camera



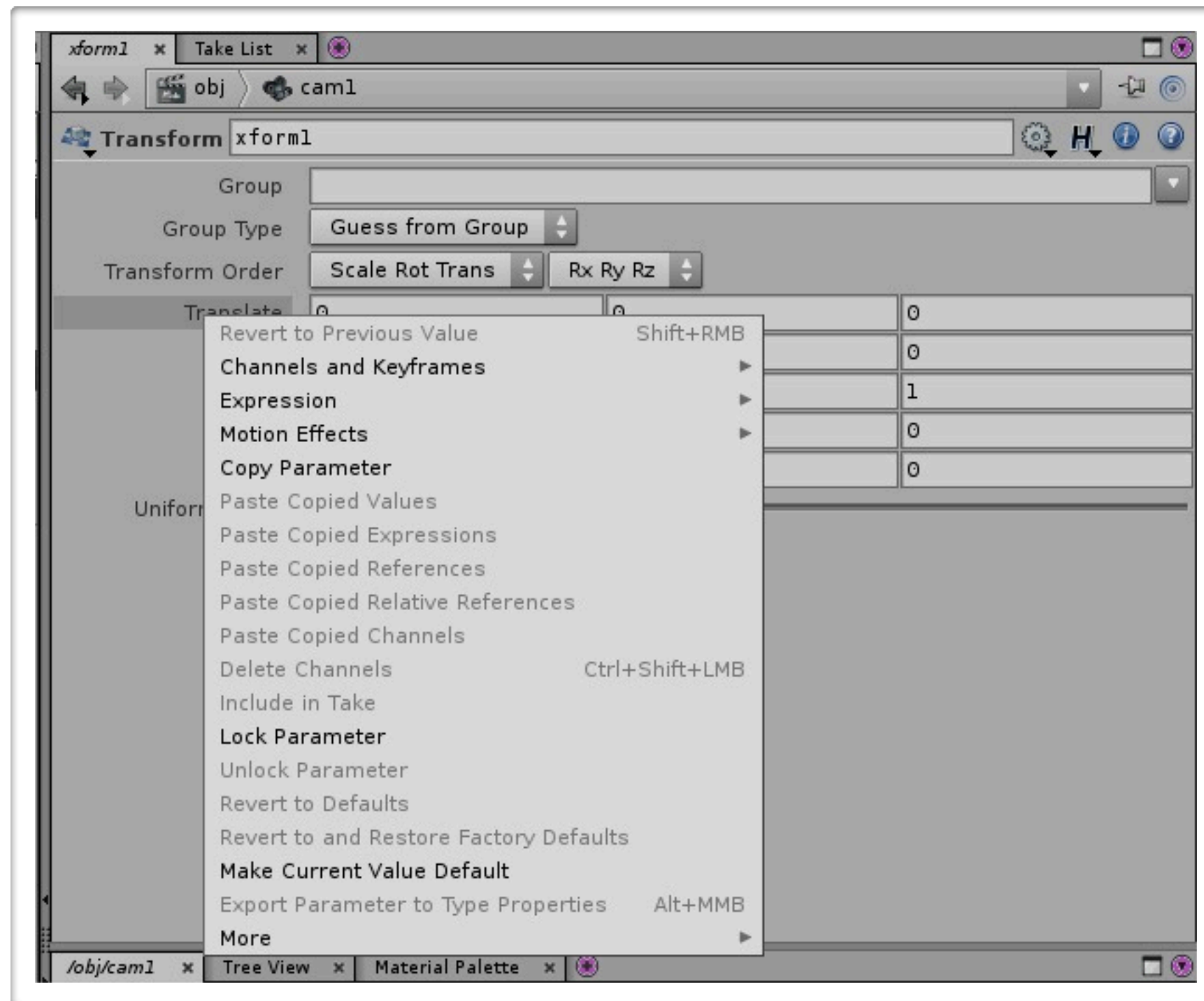
- ▶ Projection Type
 - ▶ Perspective, orthographic, polar, cylindrical
- ▶ Resolution
- ▶ Pixel Aspect Ratio
- ▶ Focal Length (zoom)
- ▶ Aperture (width of visible field)
- ▶ Near and Far Clipping

Setting up the Camera - cont.



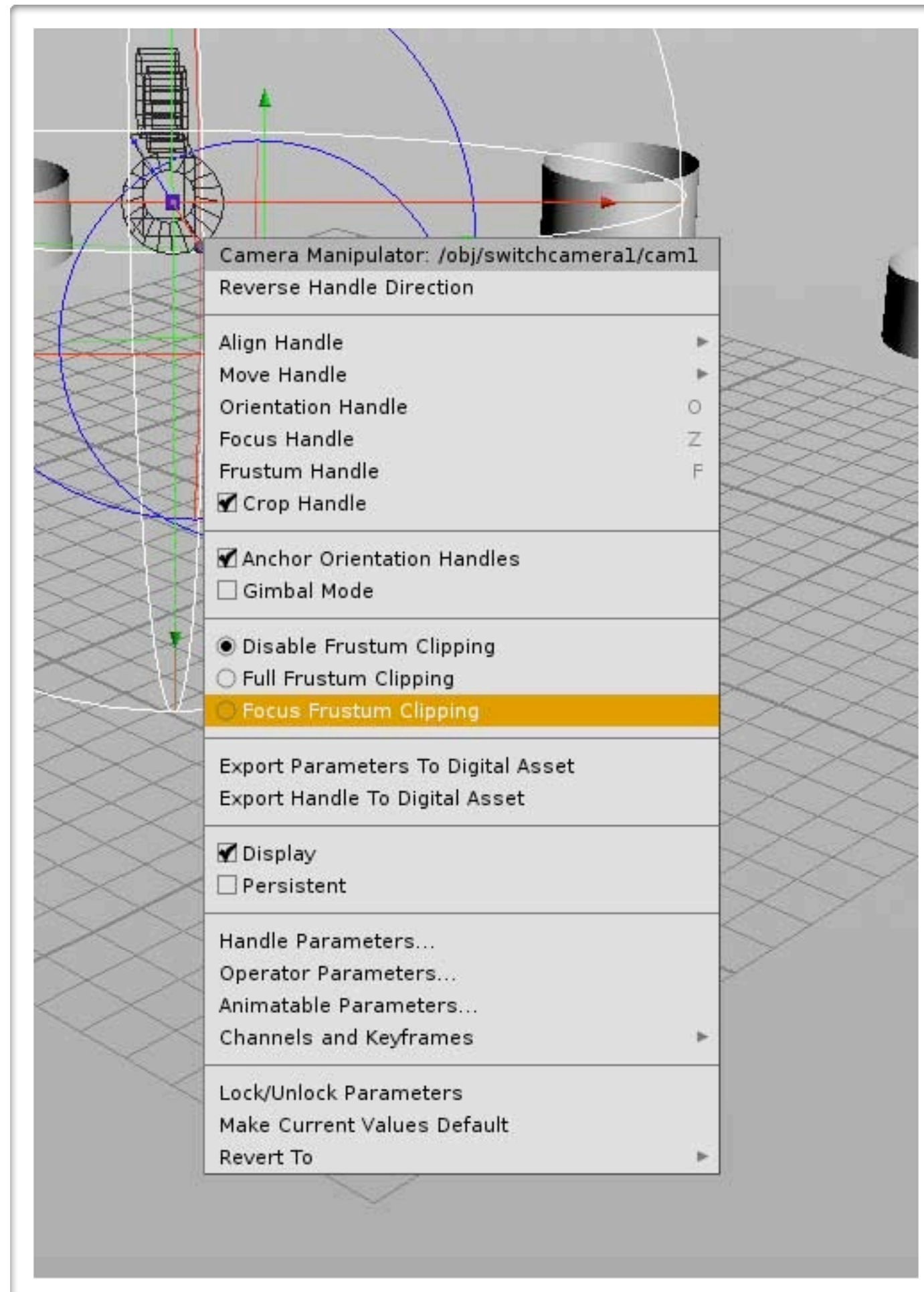
- ▶ Shutter Time - for blur
- ▶ Focus Distance - distance from camera which object are in focus
- ▶ F-Stop - Determines blurriness of objects
- ▶ Boken - Pattern blurriness makes

Locking Parameters



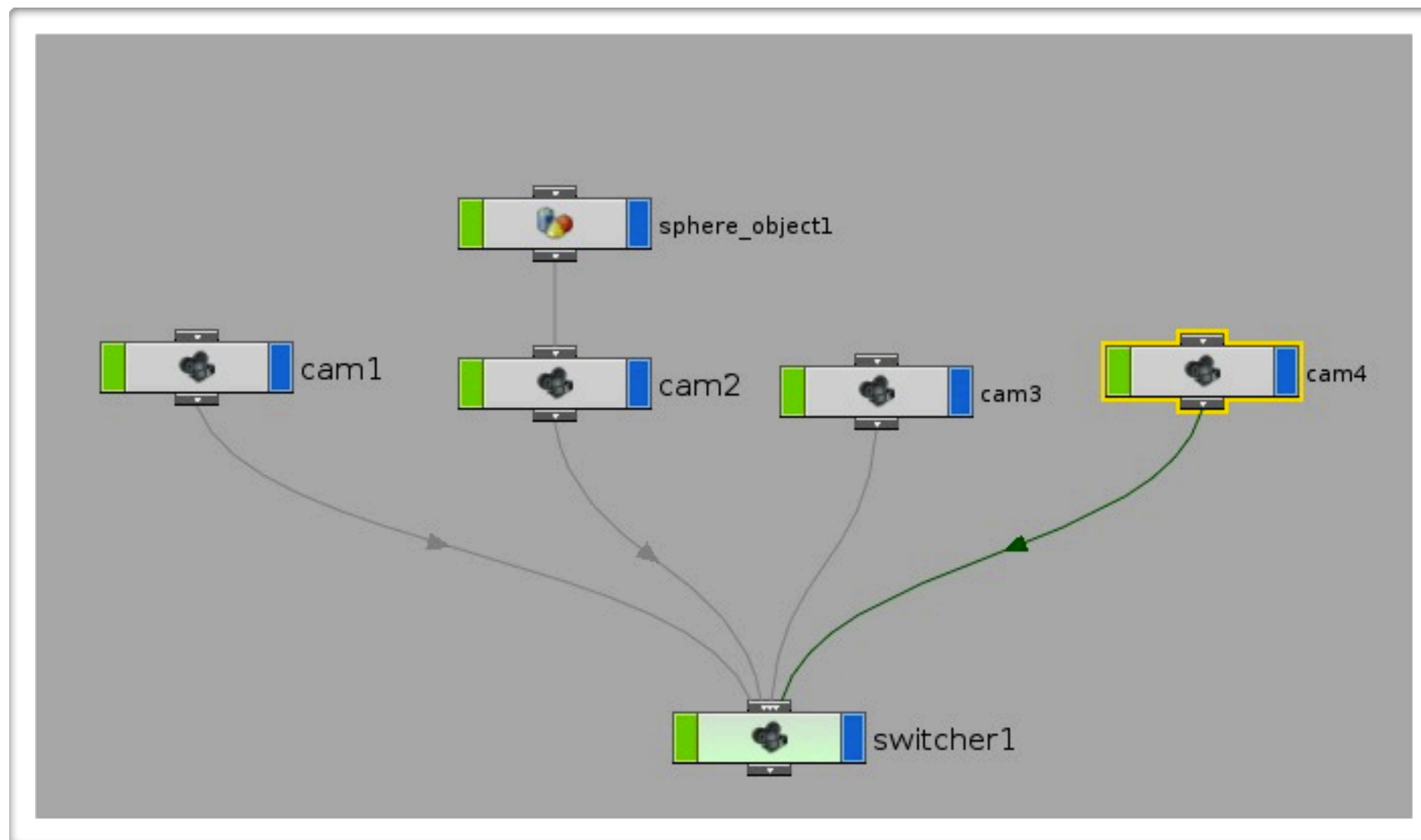
- ▶ Once Camera is in place
 - ▶ Lock Translation and Rotation
 - ▶ Right Mouse Click on Parameter and Select “Lock Parameter”

Visualizing Depth of Field

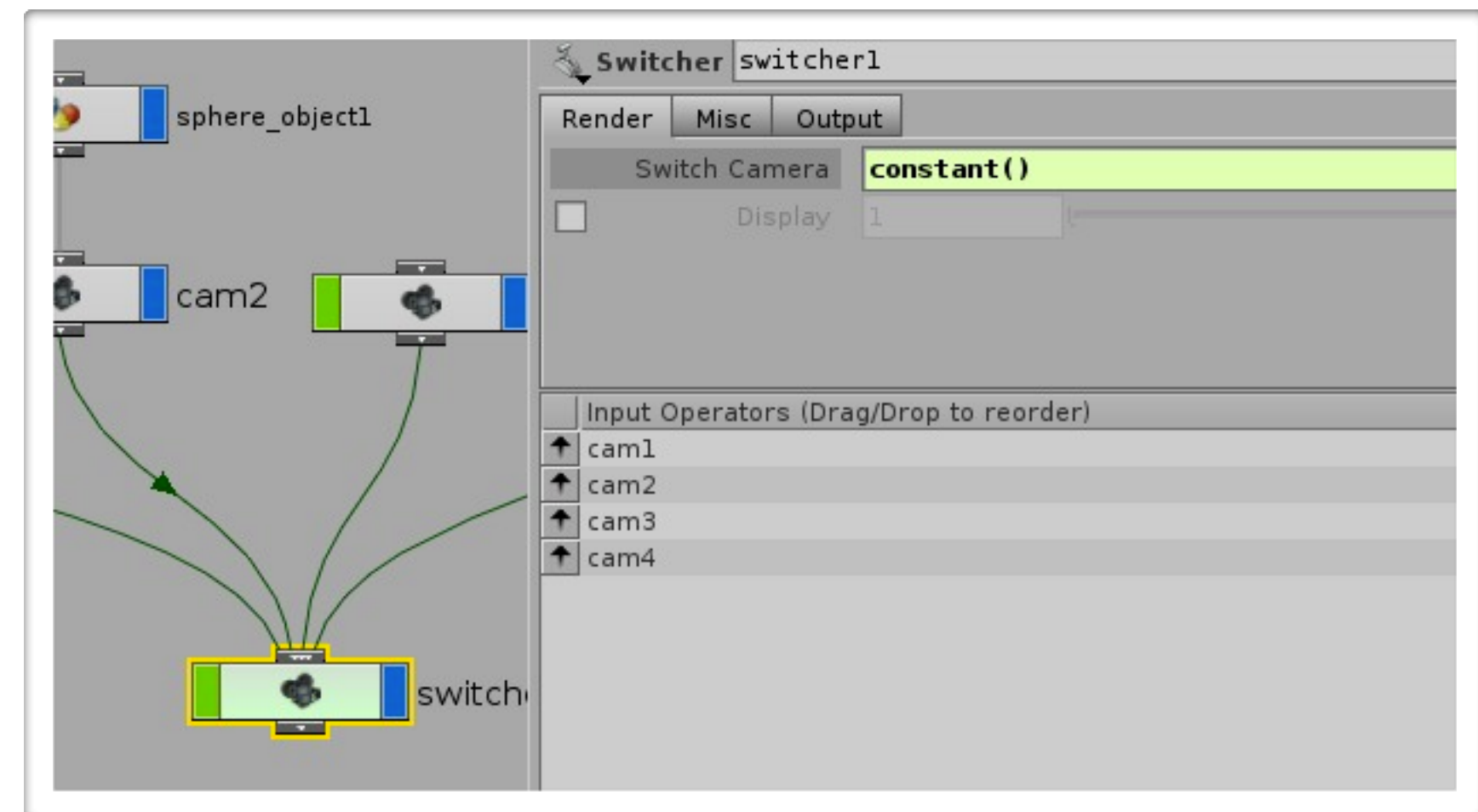


- ▶ Right Mouse Click on the Camera in the 3D Viewport
- ▶ Many Options to choose from:
 - ▶ Try “Focus Frustum Clipping” and see the new handles appear.

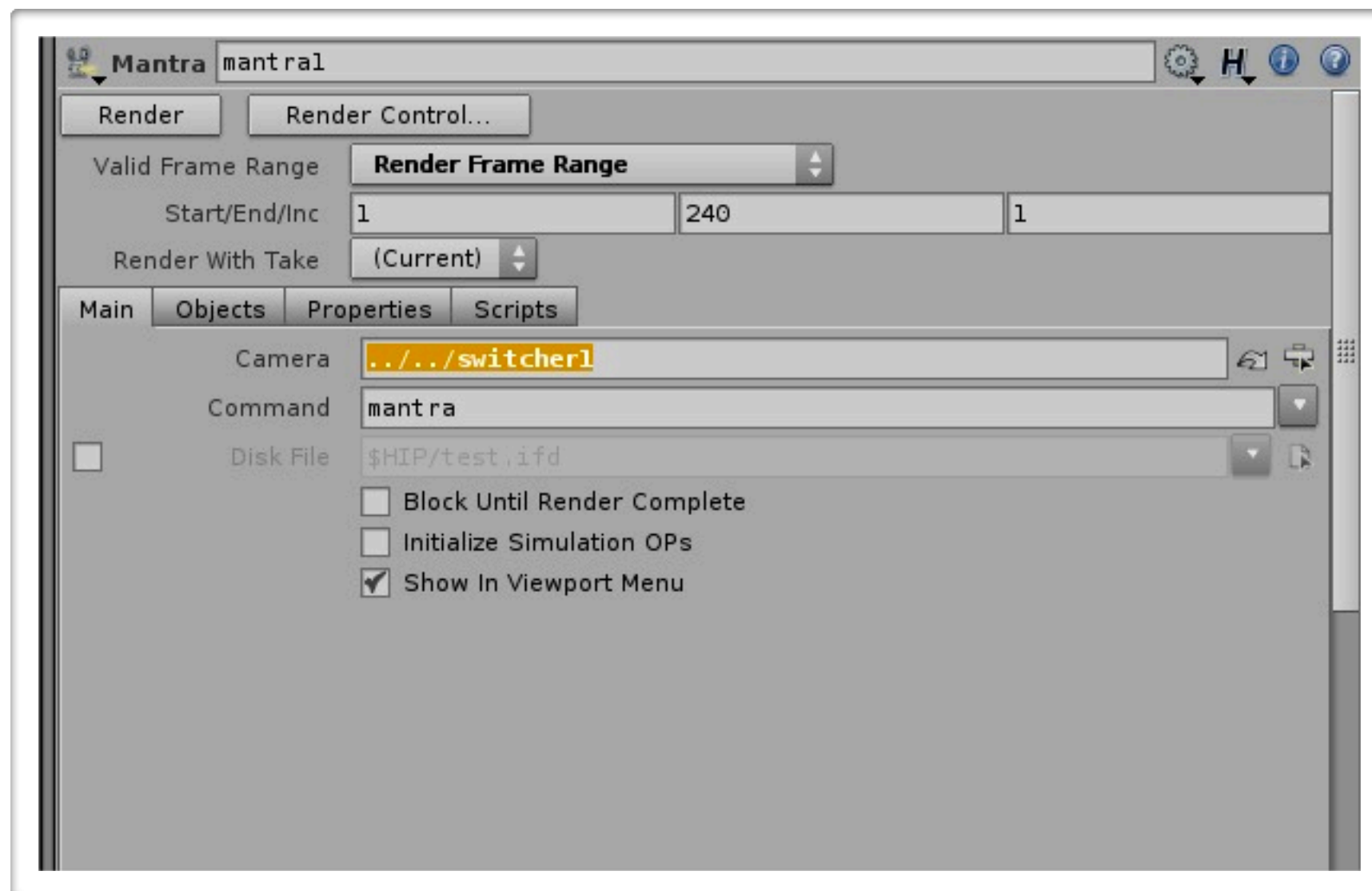
Switcher Camera Object



- ▶ Acts as a single camera for rendering but allows multiple cameras to be input for switching
- ▶ To see in the 3D Scene which is the active camera you must embed a geometry into the OP

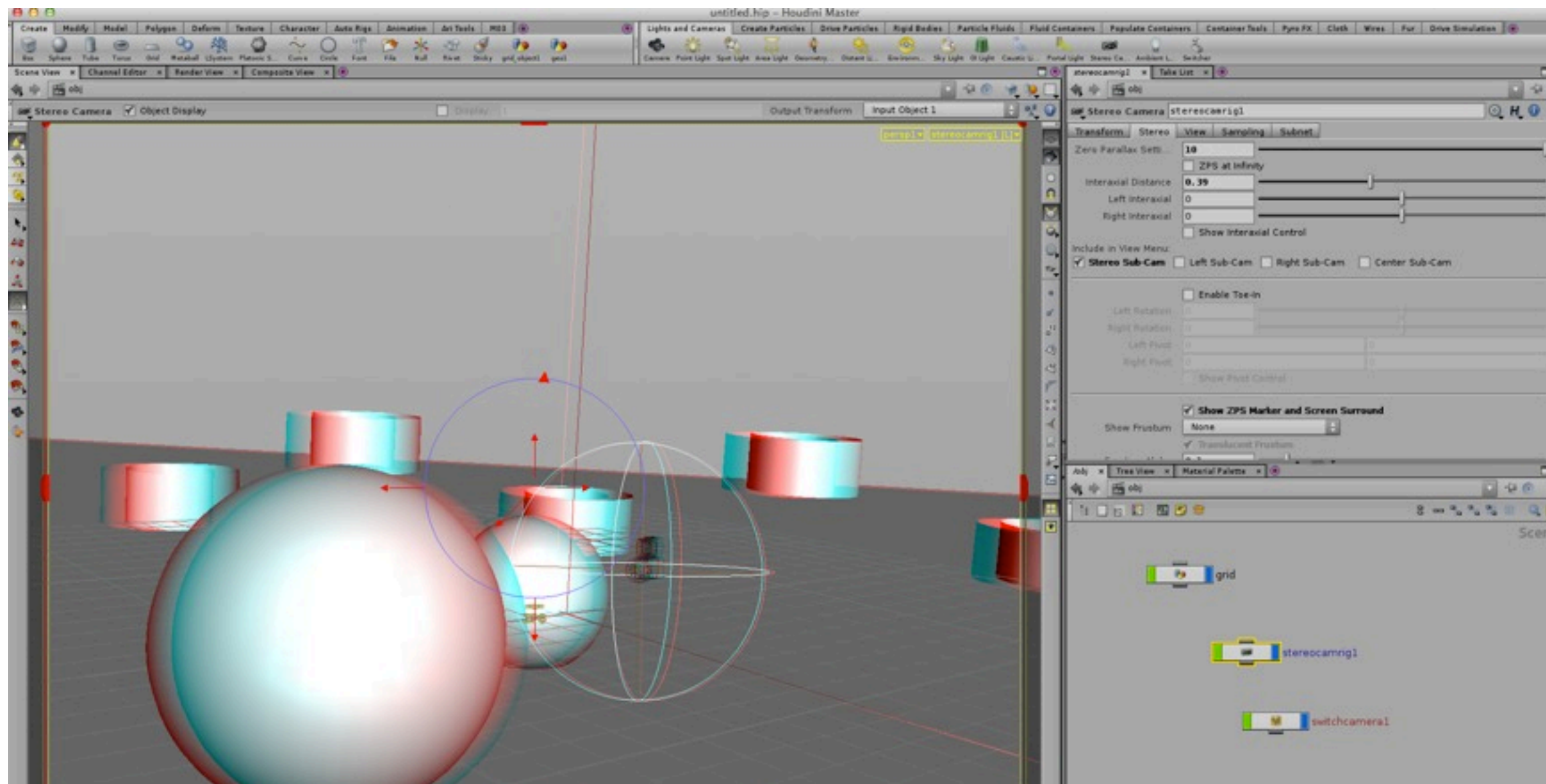


Switcher Camera - cont.



- ▶ To embed geometry to see Switcher in viewport
 - ▶ Dive into SWITCHER OBJECT
 - ▶ Drop down a geometry such as a sphere or box
- ▶ When Keyframing the SWITCH Camera the most straightforward function is a constant() not a bezier()
- ▶ In a ROPNET you can use the SWITCH camera like any other camera
 - ▶ In the ROPNET lay down a Mantra node
 - ▶ In the Main Tab in the Camera Parameter link the Switcher Object

Stereo Camera



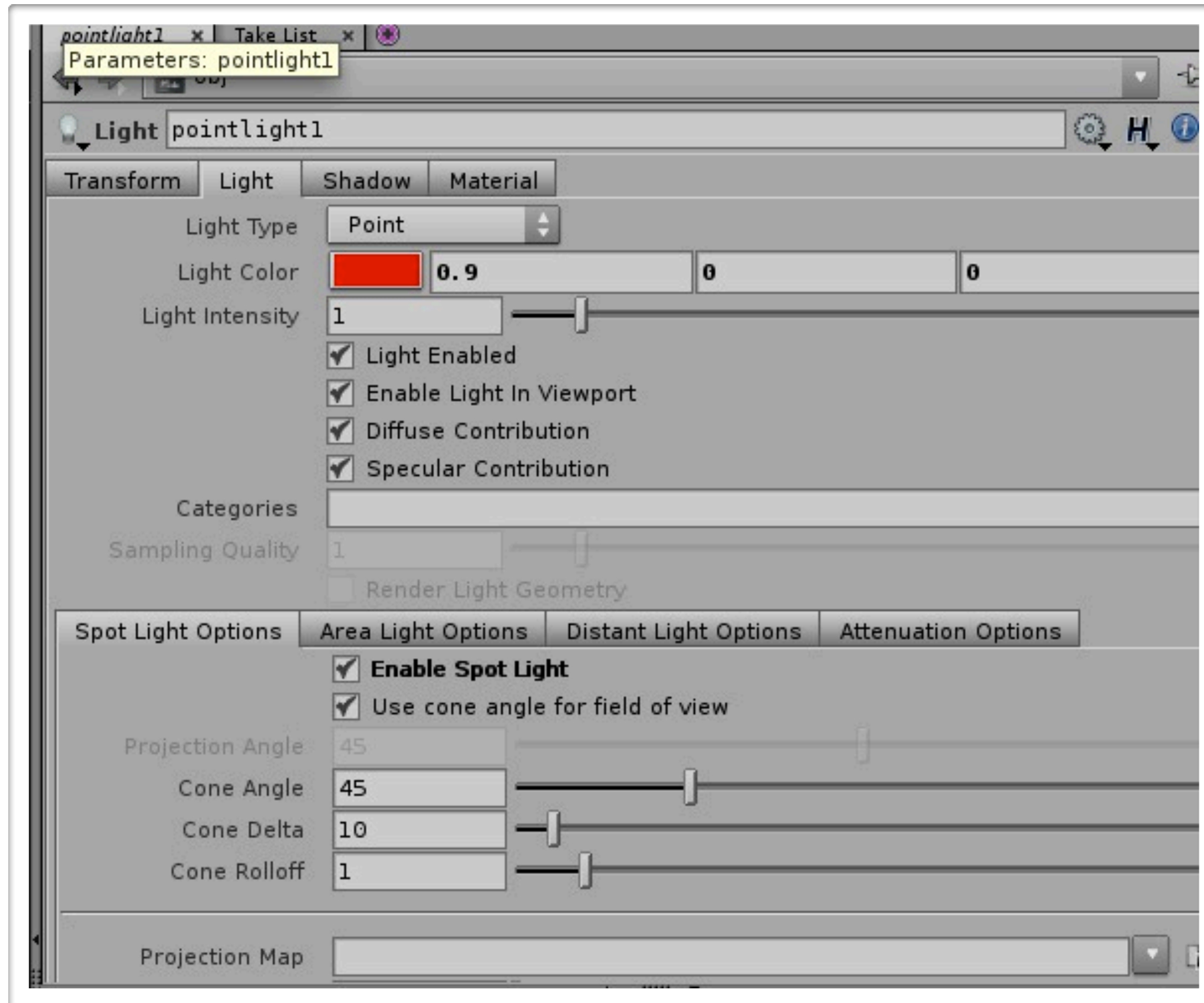
- ▶ Zero Parallax
- ▶ Interaxial Distance
- ▶ Sub-Cams
- ▶ Zero Parallax Marker
- ▶ Frustum



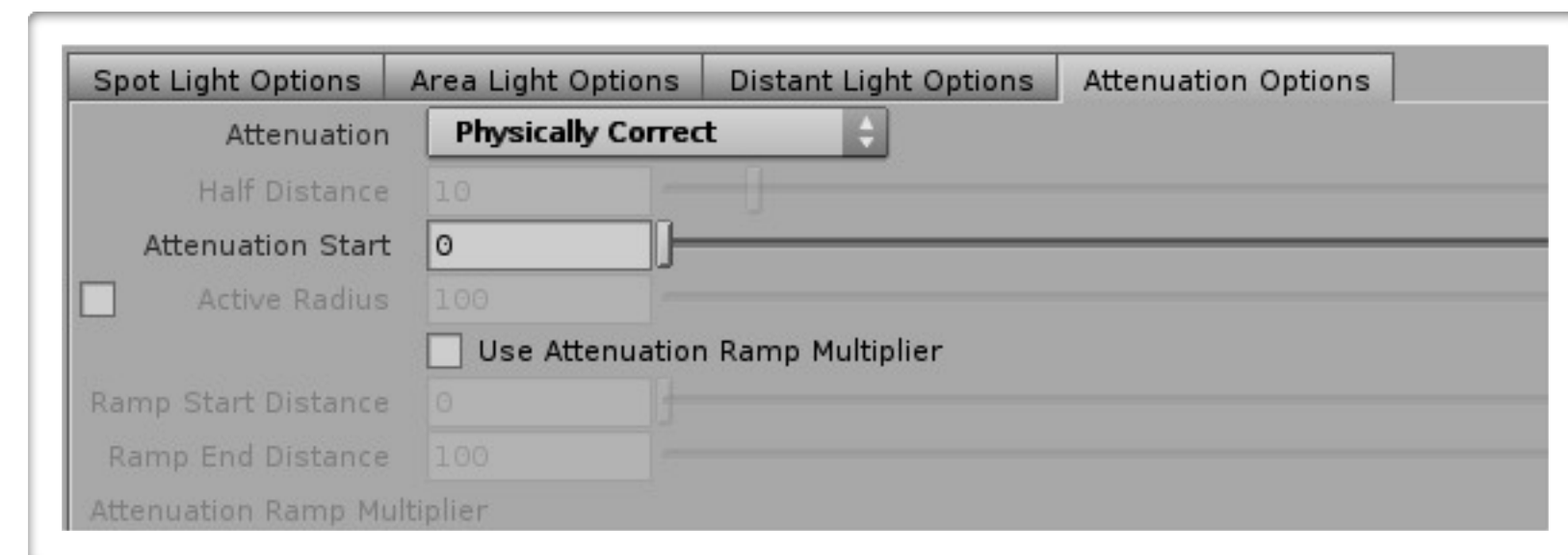
Light Types

Light Type	Position	Orientation
Point	Yes	No
Spot	Yes	Yes
Distant	No	Yes
Area	Yes	Yes
Environment	No	No

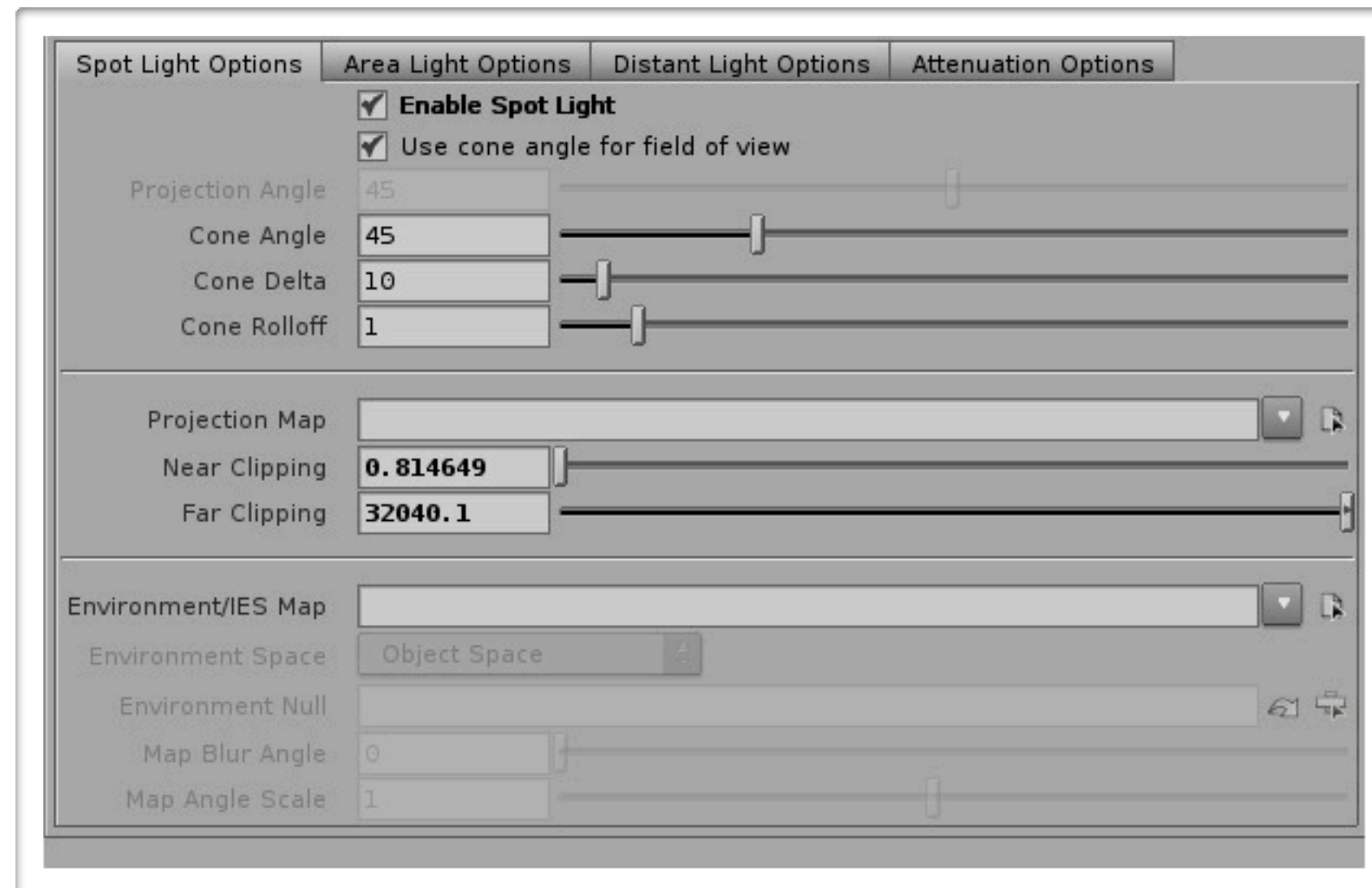
General Light Knowledge



- ▶ Light Intensity
- ▶ Light Attenuation
 - ▶ Half Distance Attenuation
 - ▶ Physically Correct
- ▶ Diffuse and Specular Contribution
- ▶ Sample Quality

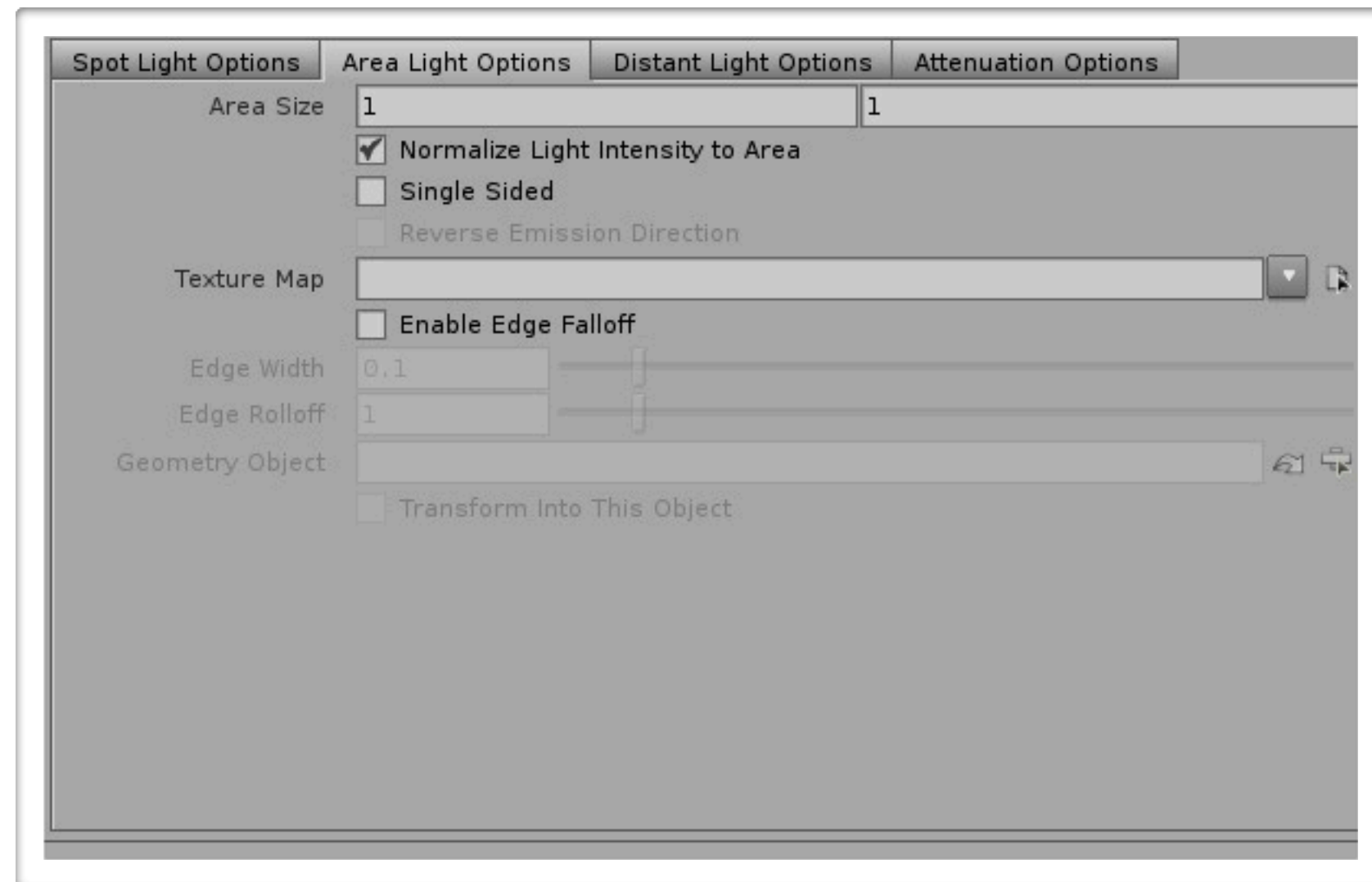


Spot Light Knowledge



- ▶ Cone Angle
- ▶ Cone Delta
- ▶ Cone Rolloff
- ▶ Projection Mapping

Area Light Knowledge



- Types of Area Lights
 - Line
 - Grid
 - Disk
 - Sphere
 - Geometry
- Area Size
- Normalize Light Intensity to Area



Setting Up A Mantra Node

- **Output**

- ip vs file

- **Objects Tab**

- Excluding Objects, Phantoms
 - Excluding Lights
 - Headlight Creation

- **Properties Tab**

- Render Types
 - Micropolygon
 - Ray Trace
 - PBR

- **Sampling Tab**

- Pixel Samples
 - Enable Depth of Blur
 - Allow Motion Blur
 - Noise Level

- **Shading Tab**

- Diffuse Limit