

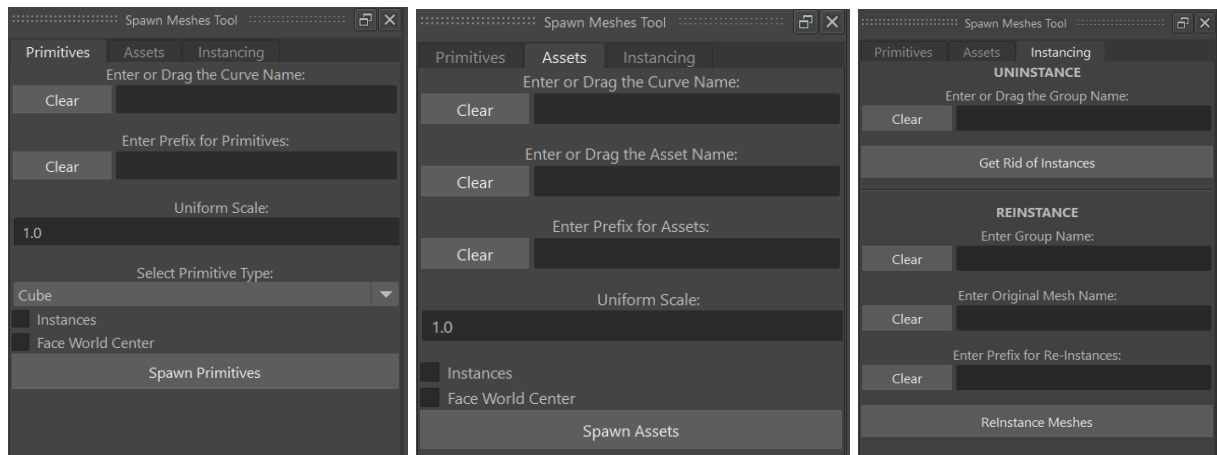
# Procedural Curve Mesh Spawner README

Tool Usage Tutorial/Breakdown:

Tool Installation Tutorial:

It was recently requested by a 3D artist friend of mine to develop a tool that can spawn primitives and already created meshes along every point on a nurbs curve in Maya. It was also requested to have the option to have the spawned meshes instanced to each other or not, as well as the ability to get rid of instances and re establish instances for groups of meshes. I then took it upon myself to make a customized script that can accomplish these requests and more. Here's a breakdown of how the tool fully works:

The tool is split up into three main tabs: Primitives, Assets, and Instancing

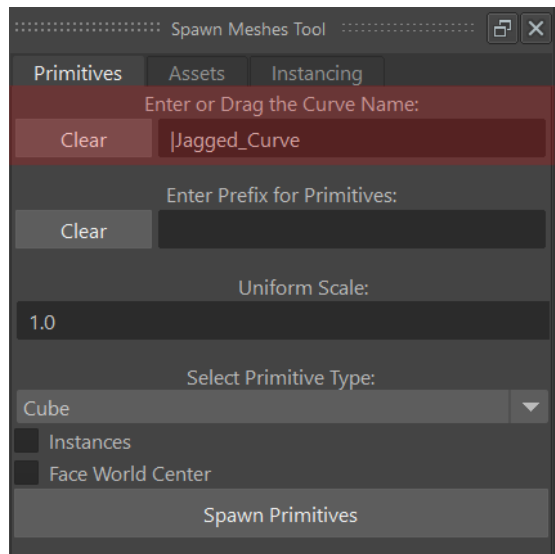


## Table of Contents:

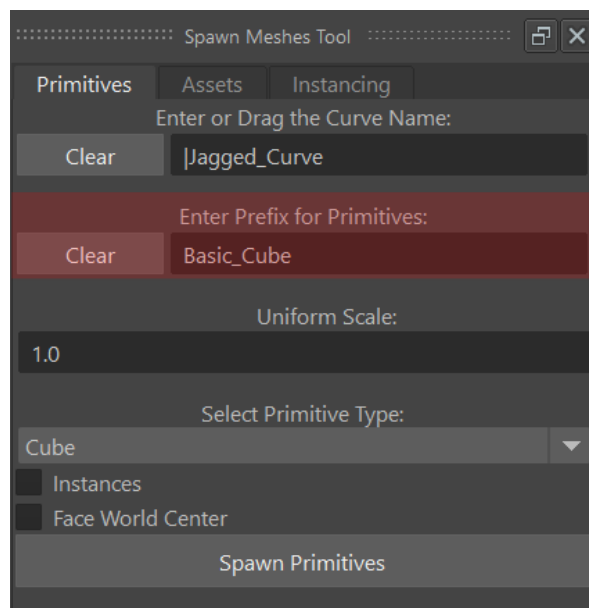
- [Page 2: Primitives](#)
- [Page 5: Assets](#)
- [Page 8: Instancing](#)
- [Page 11: Clear Buttons](#)
- [Page 12: Closing Remarks](#)

## Primitives:

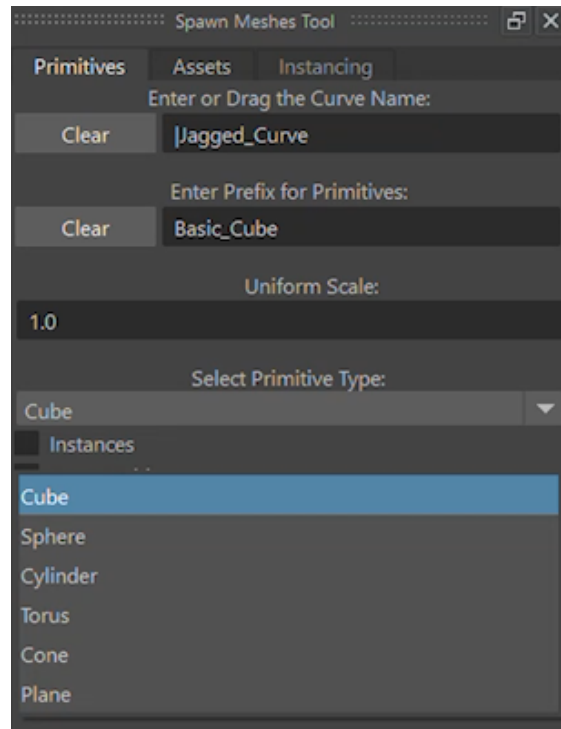
As you may expect, the primitives tab's purpose is to be able to spawn any default primitive shape along the points of a nurbs curve in Maya. You first will need to enter the name of a curve to spawn the primitives on. You can do this by either dragging the curve name from the Maya Outliner, or by copying the name of the curve into the textbox.



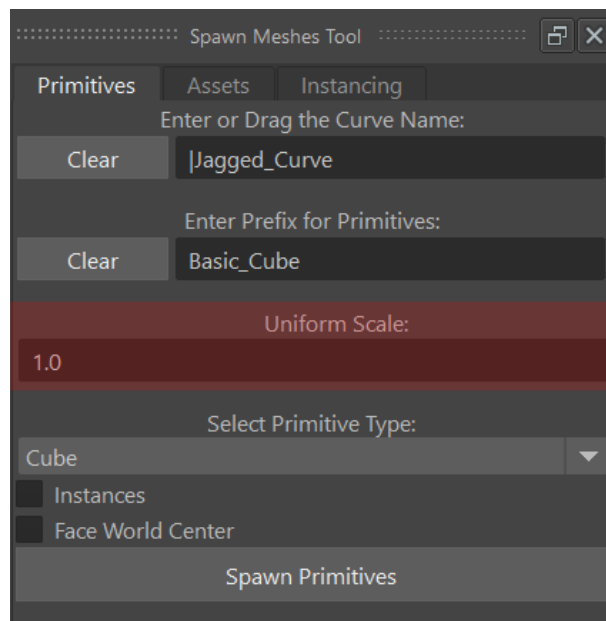
After having your curve properly selected and named, you will then want to establish a prefix for your primitives that you plan to spawn.



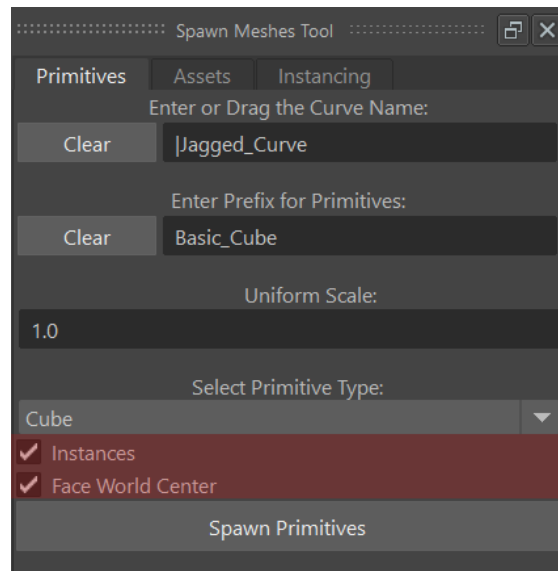
From here, you'll want to make sure your preferred primitive shape is what's spawned along the curve using the drop down menu.



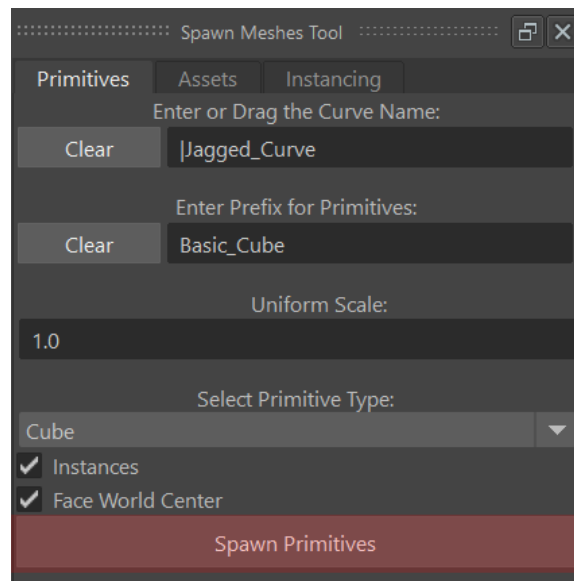
After this, you have everything you need in order to spawn your primitives along your curve, but there are some quality of life options you can mess around with. The first being the Uniform Scale option in which you can enter any numerical value to scale each primitive by.



Finally, you have a checkbox to have the spawned meshes be instanced to each other or not with the “Instances” checkbox, as well as the ability to have the meshes be facing the center of the Maya scene with the “Face World Center” checkbox. If you would like to edit each primitive simultaneously, it is in your best interest to spawn with the “Instances” checked on. If your curve is a circle that you’d like each primitive to face inwards to, it is a good idea to have “Face World Center” checked on.

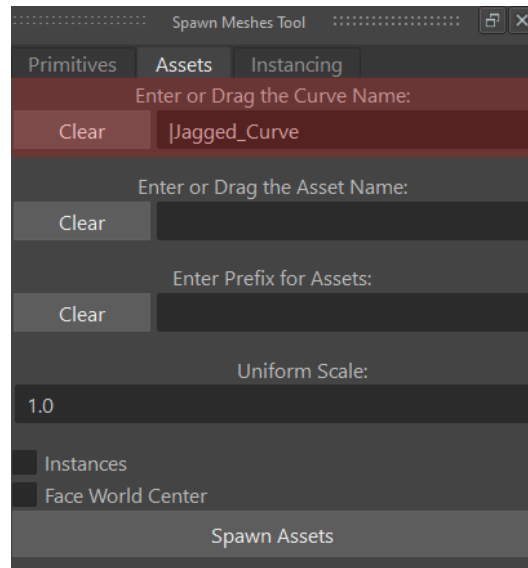


Once you have your preferences for the primitives all set up, you’re free to spawn them along your curve!

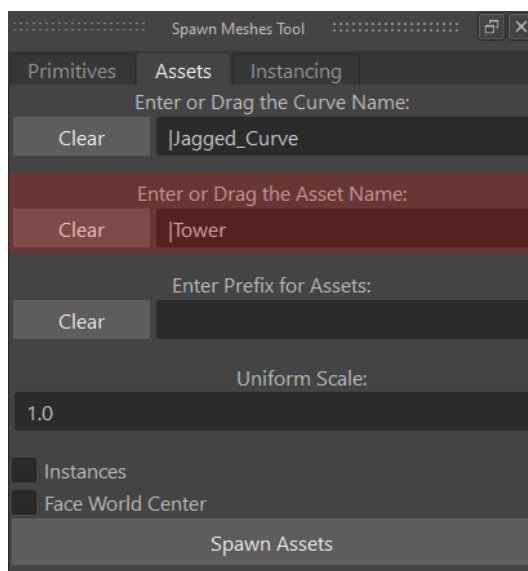


## Assets:

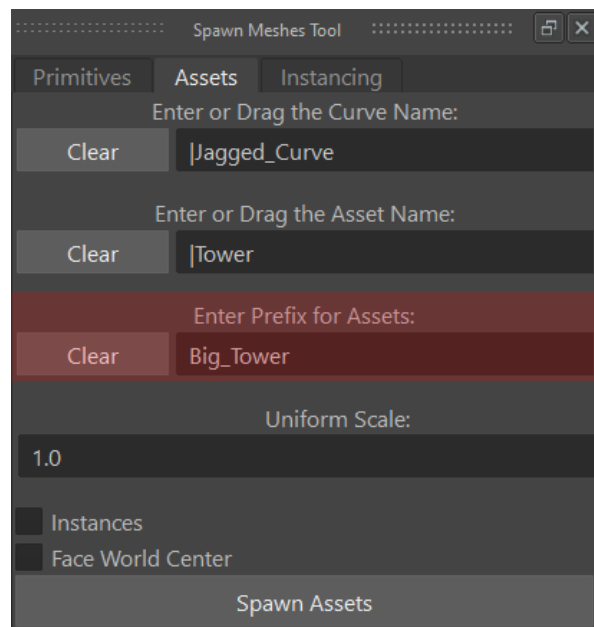
The Assets tab is programmed around the desire to copy an already created mesh asset within the Maya scene along any nurbs curve for easy and quick asset placement. To achieve this functionality you are first going to want to specify the name of your curve. You can do this by either dragging the curve name from the Maya Outliner, or by copying the name of the curve into the textbox.



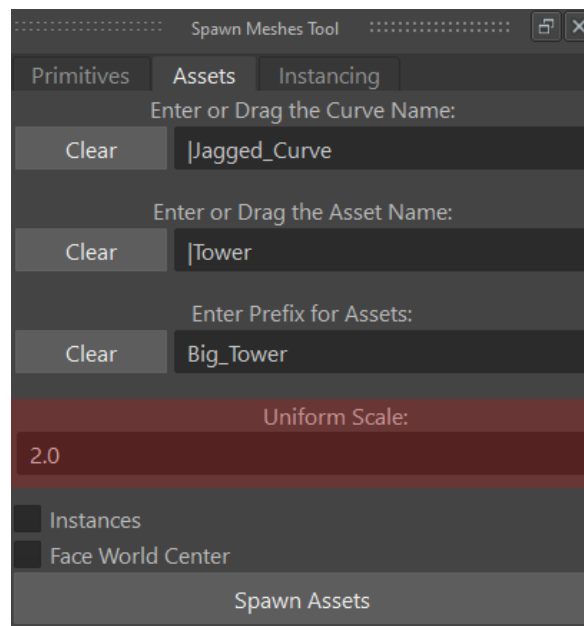
After this you'll want to also specify the name of your mesh asset. You can achieve this using the same methods as described for naming the curves.



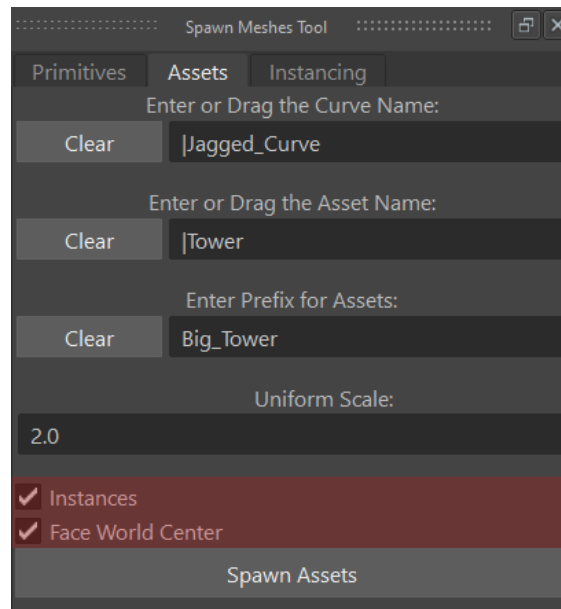
After having your curve and asset properly selected and named, you will then want to establish a prefix for your assets that you plan to spawn.



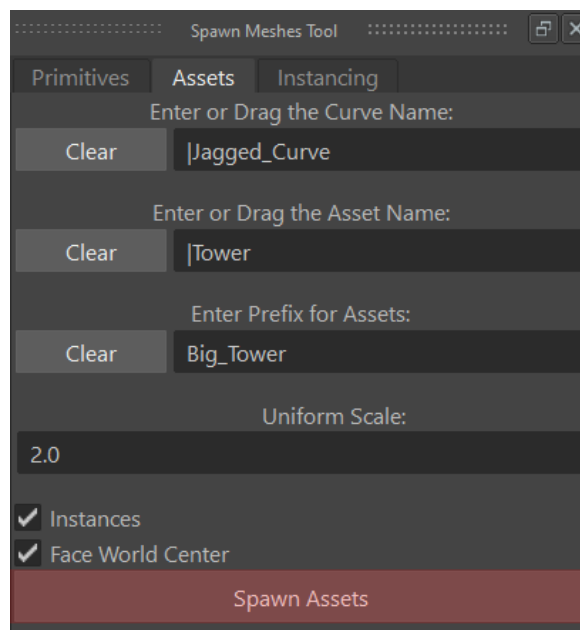
After this, you have everything you need in order to spawn your assets along your curve, but there are some quality of life options you can mess around with. The first being the Uniform Scale option in which you can enter any numerical value to scale each asset by.



Finally, you have a checkbox to have the spawned meshes be instanced to each other or not with the “Instances” checkbox, as well as the ability to have the meshes be facing the center of the Maya scene with the “Face World Center” checkbox. If you would like to edit each asset simultaneously, it is in your best interest to spawn with the “Instances” checked on. If your curve is a circle that you’d like each asset to face inwards to, it is a good idea to have “Face World Center” checked on.

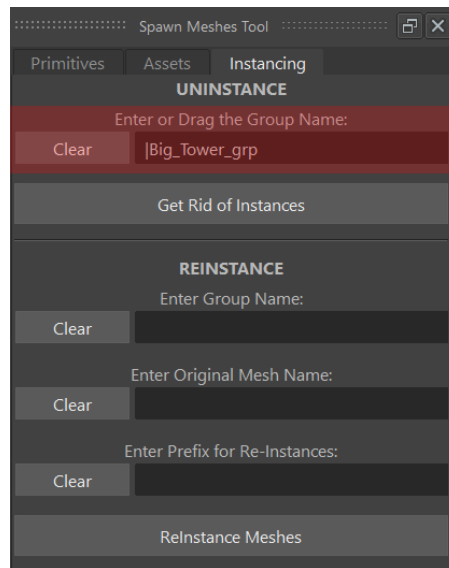


Once you have your preferences for the primitives all set up, you’re free to spawn them along your curve!

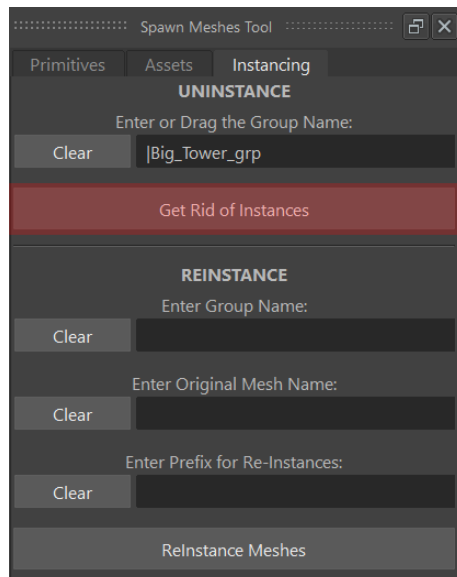


## Instancing:

The Instancing tab is meant to provide the option to both instantly get rid of the instances for any group of meshes that have been spawned with the tool, as well as the ability to instantly instance any group of meshes spawned with this tool. Due to these two main components of the tab, it's split up into two sections, one for Uninstancing and one for Instancing. In order to Uninstance a group you'll only need the name of the group of instanced meshes to then get rid of the instances. You can do this by either dragging the group name from the Maya Outliner, or by copying the name of the group into the textbox.

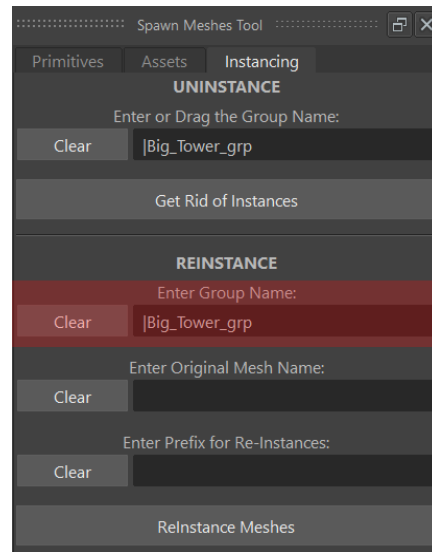


Once you have the name of the group hooked up, you're free to get rid of the instances!

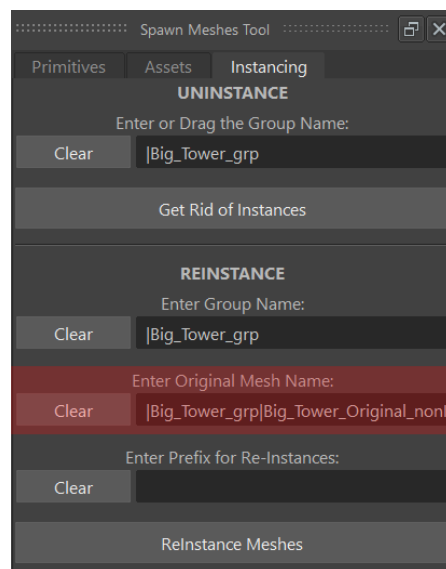




In order to apply instancing to a group that is not currently instanced, you will have to take a couple of extra steps in order to properly do so. Before we get into the extra steps make sure to identify the group name in which you wish to create instances for. You can do this by either dragging the group name from the Maya Outliner, or by copying the name of the group into the textbox.



From here you are going to want to select one mesh in your group to act as the root of all the other instances. The script will basically copy that one mesh as an instanced version to re-distribute throughout the group based on every mesh's translation rotation and scale. You can specify the original mesh name by either dragging the mesh name from the Maya Outliner, or by copying the name of the mesh into the textbox.



After having your group and source mesh properly named, you will then want to establish a prefix for your assets that you plan to spawn with instancing.

The image shows a software window titled "Spawn Meshes Tool" with three tabs: "Primitives", "Assets", and "Instancing". The "Instancing" tab is selected. The window is divided into two main sections: "UNINSTANCE" and "REINSTANCE".

**UNINSTANCE Section:**

- Label: "Enter or Drag the Group Name:"
- Input field: Contains "Big\_Tower\_grp". A "Clear" button is to its left.
- Button: "Get Rid of Instances"

**REINSTANCE Section:**

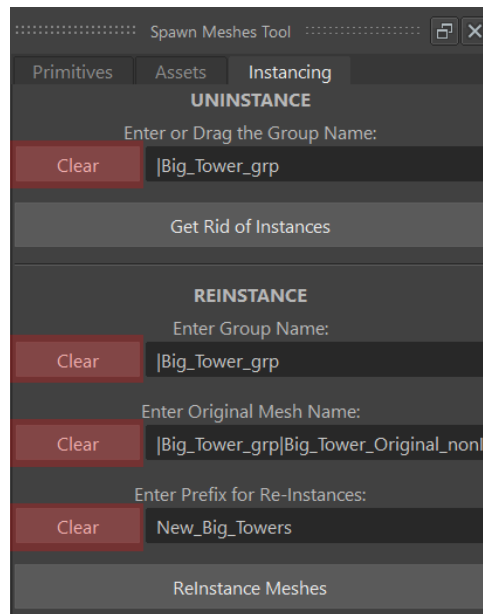
- Label: "Enter Group Name:"
- Input field: Contains "Big\_Tower\_grp". A "Clear" button is to its left.
- Label: "Enter Original Mesh Name:"
- Input field: Contains "Big\_Tower\_grp|Big\_Tower\_Original\_nonl". A "Clear" button is to its left.
- Label: "Enter Prefix for Re-Instances:"
- Input field: Contains "New\_Big\_Towers". A "Clear" button is to its left.
- Button: "ReInstance Meshes"

Once you have all of these conditions met and filled out, you are good to spawn your meshes as instanced versions of the original mesh itself!

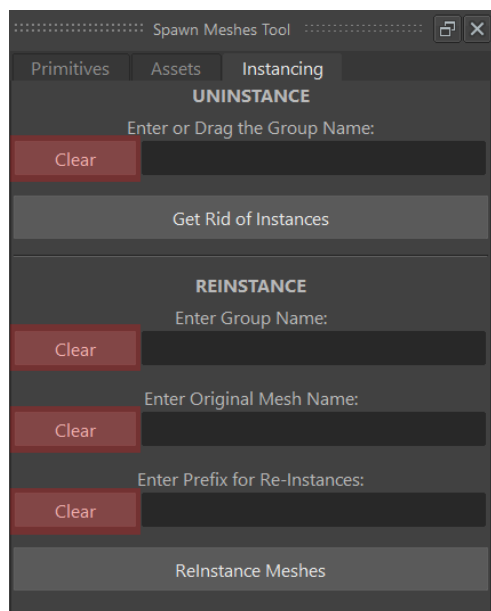
This is a duplicate of the screenshot above, showing the "Spawn Meshes Tool" window with the "Instancing" tab selected. It displays the "UNINSTANCE" and "REINSTANCE" sections with the same input values: "Big\_Tower\_grp" for the group name, "Big\_Tower\_grp|Big\_Tower\_Original\_nonl" for the original mesh name, and "New\_Big\_Towers" for the re-instance prefix.

## Clear Buttons:

You may notice that in every textbox in the tool's UI there is a button named "Clear." This button's use is to quickly clear out the text within that box. This way if you want to use this tool multiple times in a scene you can quickly clear out the text of names before dragging or typing in the new name.



Upon using these buttons it will fully clear out the textbox next to it, leaving the user the ability to quickly bring in a new entry for the desired functionality of each textbox!



### **Closing Remarks:**

Although a tool of this caliber is already made and functioning in programs like Blender, 3ds Max, and Houdini, I was requested to specifically develop something like this for Maya users who may want to have the convenience of simple proceduralism within Maya. This will make quick and effective blockouts for 3D Environmental Artists who prefer to use Maya for their blockouts have a lot more freedom for proceduralism to start off. There's a lot more functionality I could certainly add to this tool, but this is what was specifically requested by the 3D artist I am working with. If I were to have the pleasure of having another 3D artist who would like to use this tool and wants some different functionality added to the tool, feel free to reach out to me personally using any of my socials linked below!