



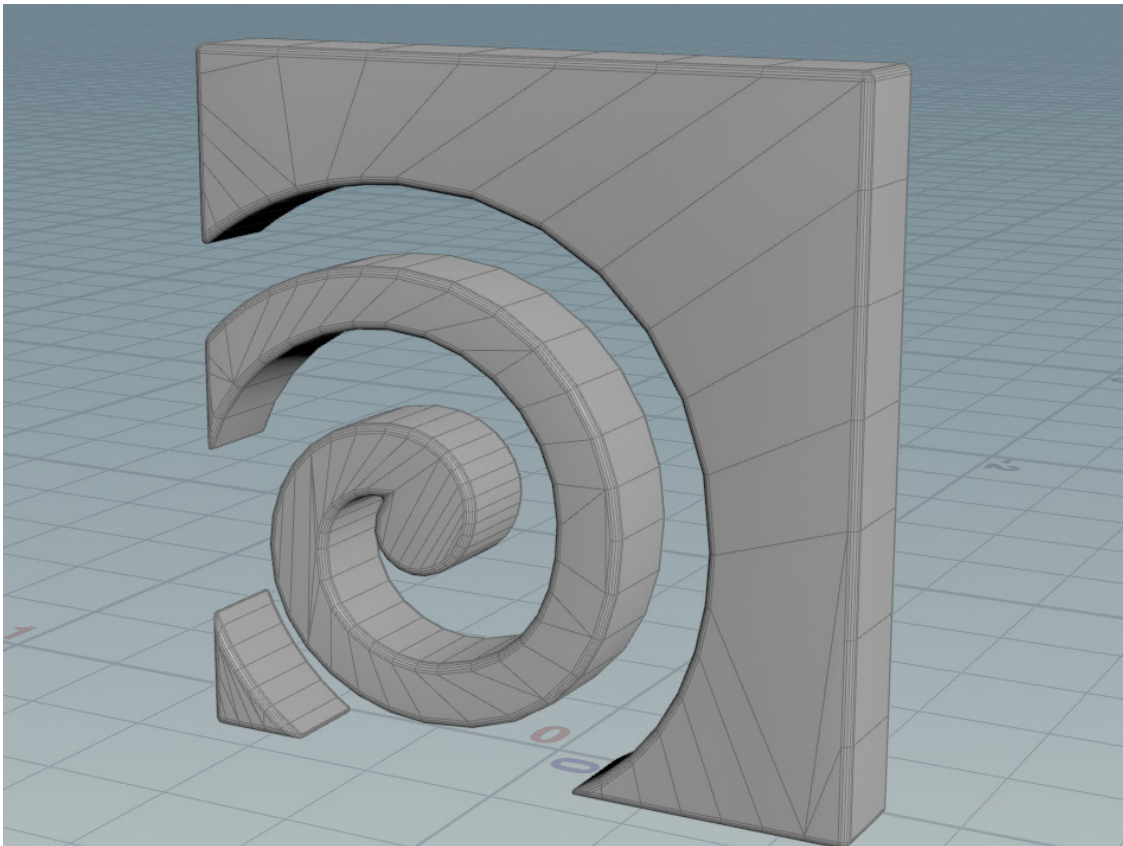
Curriculum-in-a-Box | Guided Work

MODELING A LOGO

Students are now asked to follow-along with the teacher as they build something in Houdini. For this lesson, students will learn general modeling techniques. This specific example will build a model of the Houdini logo. In order to achieve this, you will learn how to use the “Poly” tools to create things like extrusions and bevels. These are all fundamental concepts for working with geometry in Houdini. Students will have a much deeper understanding of these concepts after this guided work exercise.

WHAT STUDENTS WILL LEARN

- How to work with the Houdini modeling tools
- How to use the PolyExtrude and PolyBevel SOPs
- How to clean up imported geometry
- How to add thickness to geometry with the PolyExtrude SOP



PART ONE

Basic Logo Setup and Clean-up

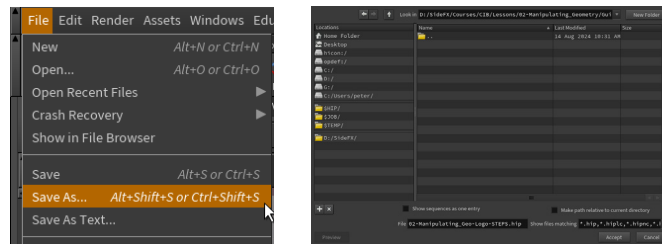
In this first section of the assignment you will show your students how to set up their project. They will then begin the process of importing a vector of the Houdini logo. In order to properly make a 3D logo from the vector, you will show students how to clean up the geometry.

1. Set up your Project Directory

- Download the *CIB_Lesson02.zip* file and unzip it then place it in the *documents>HoudiniProjects* directory.
- Open Houdini and from the **File** menu, choose **Set Project**.
- Navigate to the *CIB_Lesson02* directory and press **Accept**.

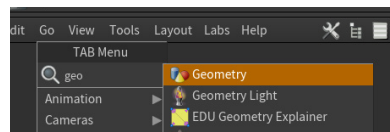
2. Save your Scene File

- From the File menu, choose **Save As**.
- Make sure you are in the *CIB_Lesson02* directory, give the **File** a name and press **Accept**.

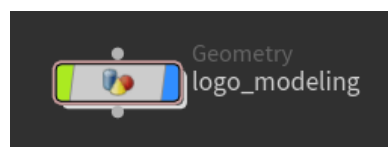


3. Set up the Geometry Network

- Press Tab in the Network View, start typing *geo* then select **Geometry**.



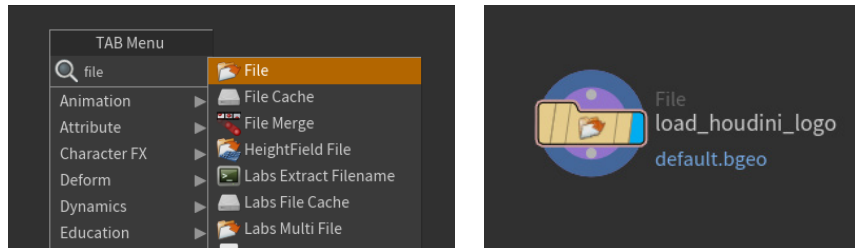
- Click in the Network View to place the node.
- Double-click the *geo1* name and change it to something like *logo_modeling*.
 - This will be a container for the geometry you create.



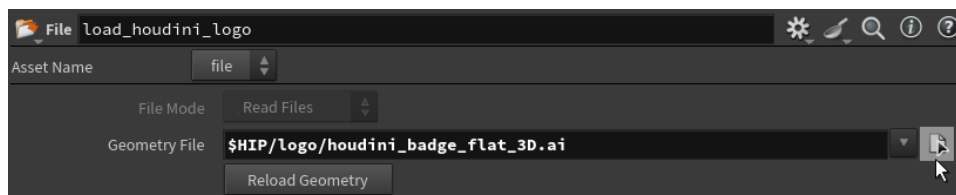
- Double-click the *logo_modeling* node to dive inside.

4. Add a logo vector to the scene

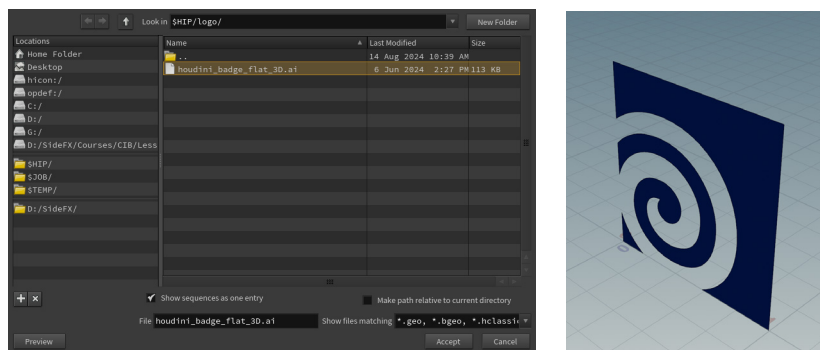
- Press **Tab** in the Network View, type *file*, and press **Enter**.
- **Click** to place the node.
- **Left-click** on the node's name and change it to *load_houdini_logo*.



- In the Parameter Pane, **click** on the **File Chooser Button** to the right of the **Geometry File** parameter.

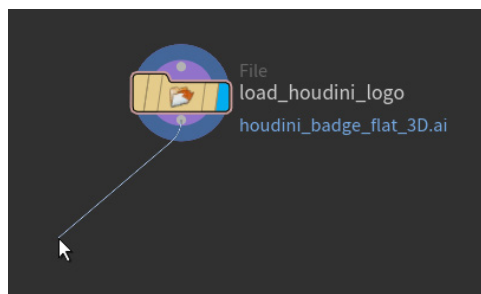


- This will bring up the file chooser where you can navigate to the provided Houdini logo.

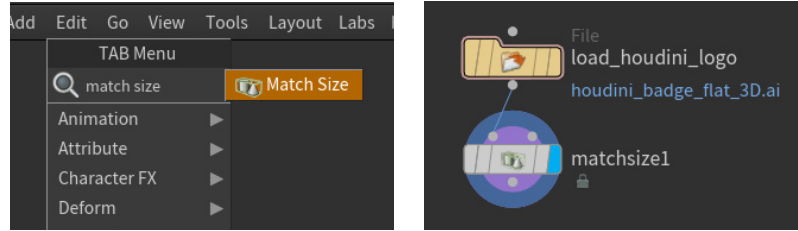


5. Center your geometry on the XZ plane

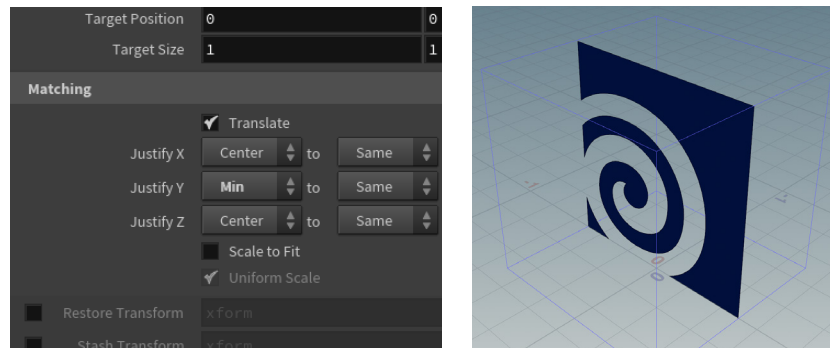
- **Left-click** on the *load_houdini_logo* node's output dot.
 - You will now have a wire that follows your cursor and is connected to the output dot



- Press **Tab** in the Network View, type *match_size*, and press **Enter**.

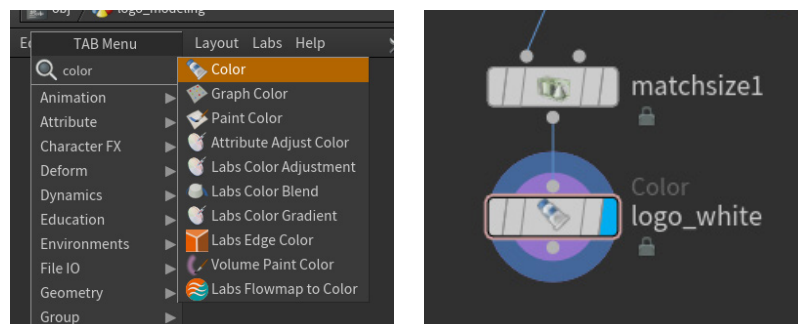


- A new *Match Size* node will be placed in your network pane and will be connected to the *File* node.
- You can move the new node in order to keep your network organized. You should see the node snap into alignment with the positions of the other nodes that are already in the network.
- Click the right-most section of the *Match Size* node to move the blue Display Flag.
 - This allows us to visualize what the *Match Size* node is doing. The Display Flag is a cornerstone of using Houdini because it lets you visualize the result of all nodes that were placed before the one with the Display Flag.
 - If your *Match Size* node isn't highlighted in yellow, click on the center of it in the Network View.
- In the Parameter Pane, change the **Justify Y** drop-down to **Min**.



6. Change the color of the logo

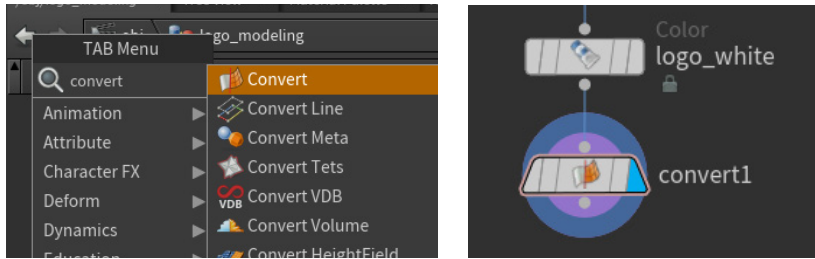
- Click the output dot of our *matchsize1* node.
- Press **Tab** in the Network View, type *color*, and press **Enter**.
- Left-click on the node's name and change it to *logo_white*.



- By default, this node will set the geometry to white. You will see this result after following these next couple of steps.

7. Convert the logo from a Bezier curve to a polygon curve

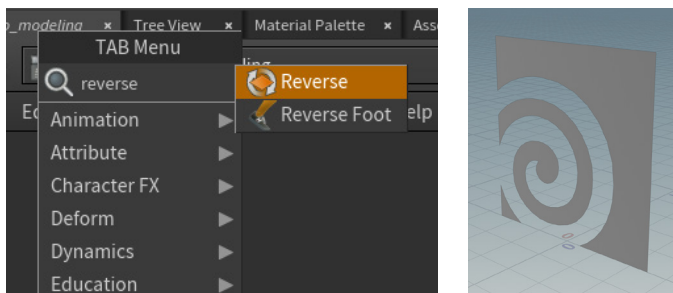
- Click the output dot of the *logo_white* node.
- Press **Tab** in the Network View, type *convert*, and press **Enter**.



- By default this node will convert any incoming geometry to polygons.

8. Reverse the polygons of the logo

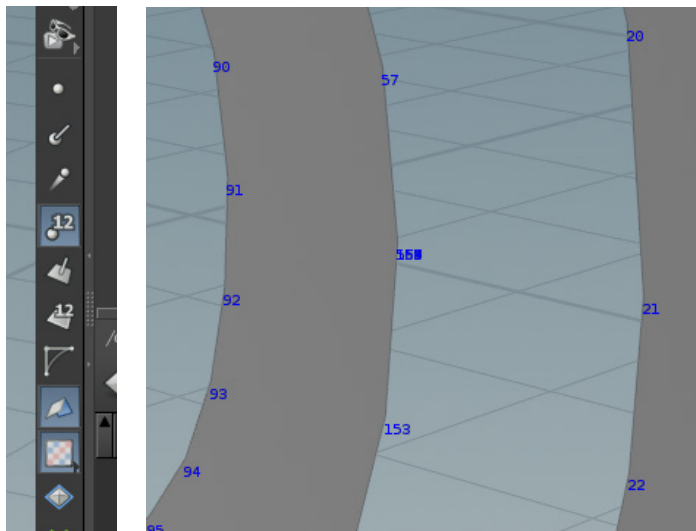
- Click the output dot of the *convert1* node.
- Press **Tab** in the Network View, type *reverse*, and press **Enter**.



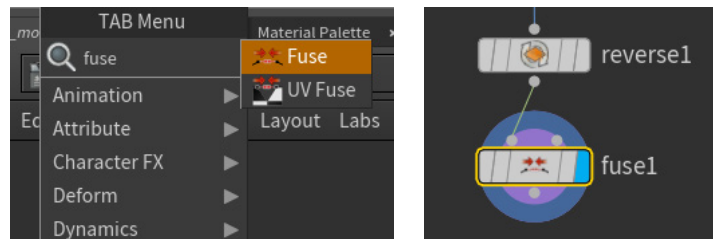
- By default this node will reverse the direction of polygons. You can identify backward polygons from their blue shading.

9. Fix duplicate points

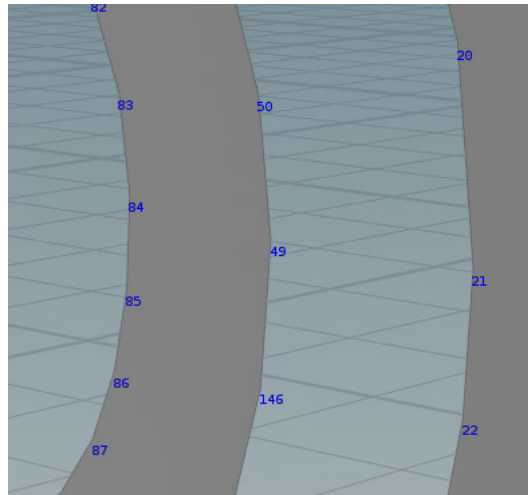
- There are some duplicate points. These can be identified by pressing the Display Point Numbers button next to the Scene View. Duplicate points will often look like jumbled numbers in the Scene View.



- Click the output dot of the *reverse1* node.
- Press **Tab** in the Network View, type *fuse*, and press **Enter**.



- By default this node will merge together any points that are nearly on top of each other.



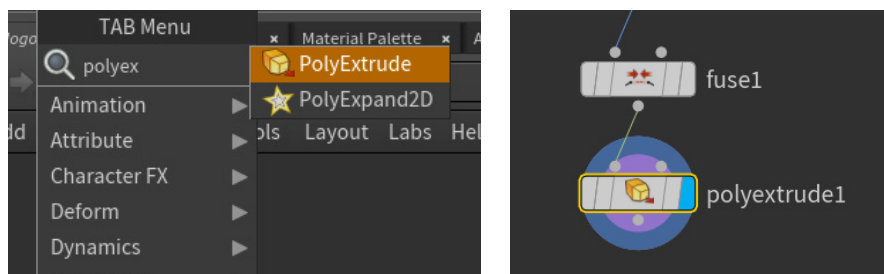
PART TWO

Extrude and Bevel Logo

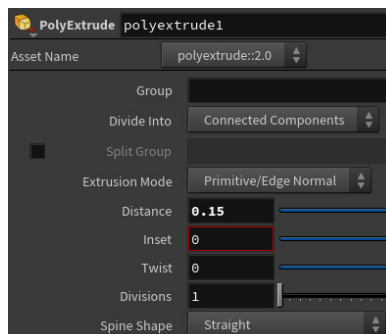
In this last step in this exercise, you will walk your students through how to add thickness to the logo, split up the large polygons on the front of the logo, and add a bevel to the sharp edges. You will primarily use the PolyExtrude and PolyBevel tools to accomplish this.

1. Extrude the logo

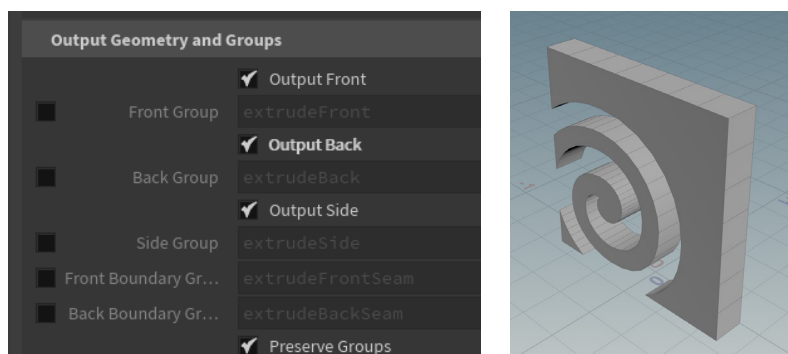
- Click the output dot of the *fuse1* node.
- Press **Tab** in the Network View, type *polyex*, and press **Enter**.



- In the Parameter Pane, change **Distance** to **0.15**.

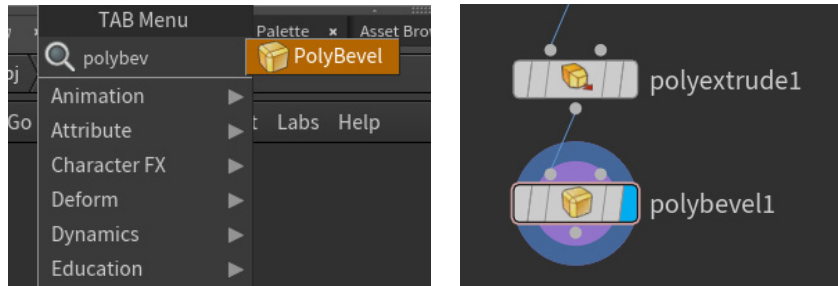


- Scroll down in the Parameter Pane to the **Output Geometry and Groups**, and check the box next to **Output Back**.

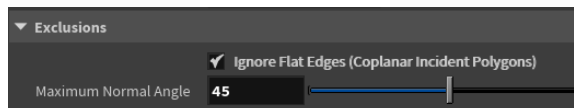


2. Bevel the hard edges of the logo

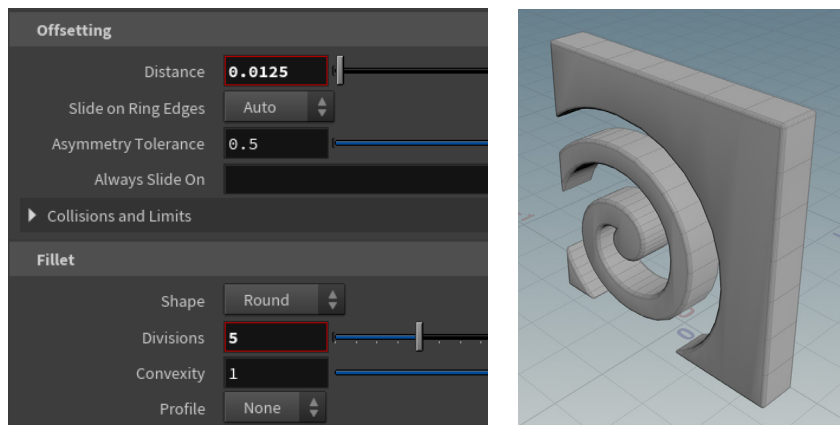
- Click the output dot of the *polyextrude1* node.
- Press **Tab** in the Network View, type *polybev*, and press **Enter**.



- In the Parameter Pane, open the **Exclusions** section and check the box next to **Ignore Flat Edges**.
- Change the **Maximum Normal Angle** to 45.

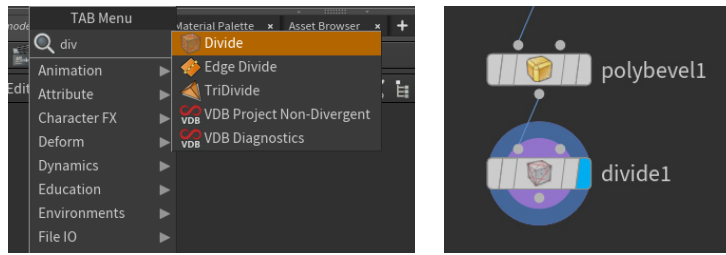


- This will make sure you are only beveling between polygons that have a relative angle over 45 degrees.
- In the **Offsetting** section, change the **Distance** to 0.0125.
- In the **Fillet** section, change the **Divisions** to 5.

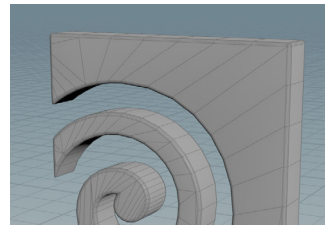
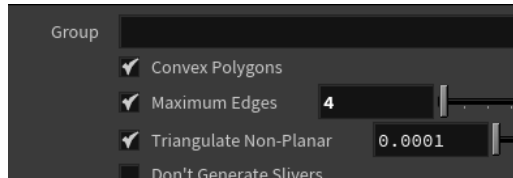


3. Divide the large faces on the front of the logo

- Click the output dot of the *polybevel1* node.
- Press **Tab** in the Network View, type *div*, and press **Enter**.



- In the Parameter Pane, change the **Maximum Edges** to 4.



CONGRATULATIONS

You have now completed your logo Modeling exercise. This exercise has taken you through a project that began with importing a vector of the Houdini logo, and created 3D geometry out of it using the PolyExtrude and PolyBevel tools.