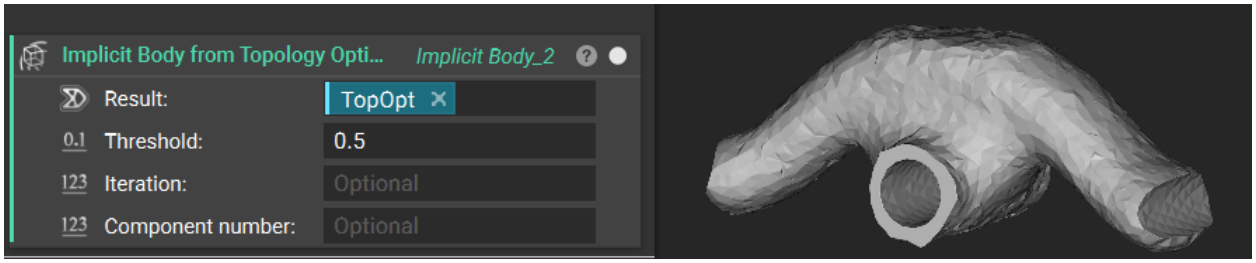
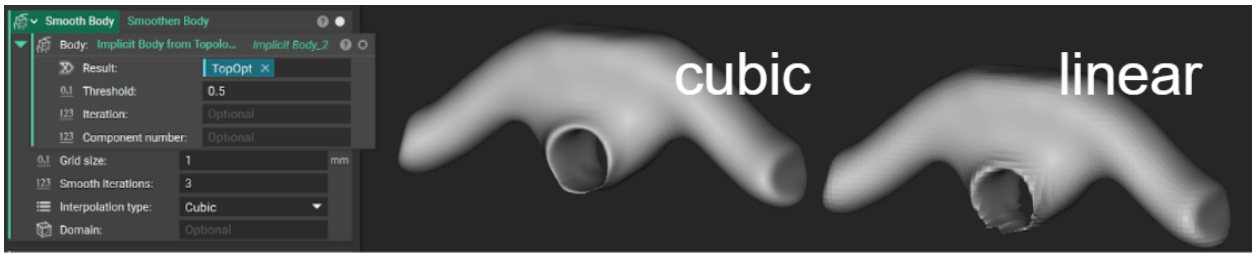
Follow Along: Post Processing

Now that we've completed our topology optimization, we need to do some post-processing to finalize our part. We have top-opt results but no implicit body with the resulting geometry. We've also lost the interfaces of the bracket, which are essential to the functionality of the part.

Step 1: Create a section called *Post Processing*. We'll begin by adding an **Implicit Body from Topology Optimization** block to our Notebook. Pull the Top-Opt results in, and this will pull the resulting geometry from the Top-Opt back into nTop form.

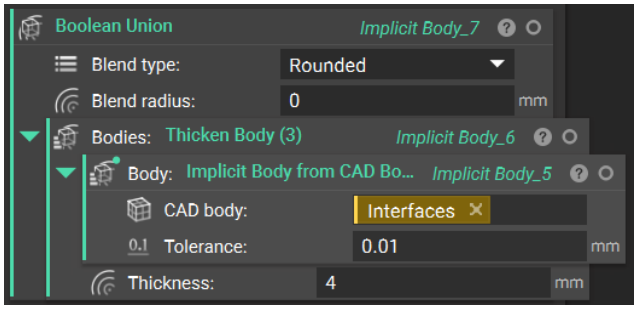


Step 2: Add a **Smoothen Body** block to your Notebook. This will smoothen the resulting rough surfaces from the Top-opt. We can modify the grid size and number of smooth iterations as needed. A cubic interpolation will typically produce a smoother, more continuous body than a linear interpolation. Since we want to smoothen the entire body rather than a particular section in a bounding box, I can leave the Domain input blank. Right-click and make this a variable called *Smooth Body*. Now we have a nice body with geometry driven by our Top-Opt results.

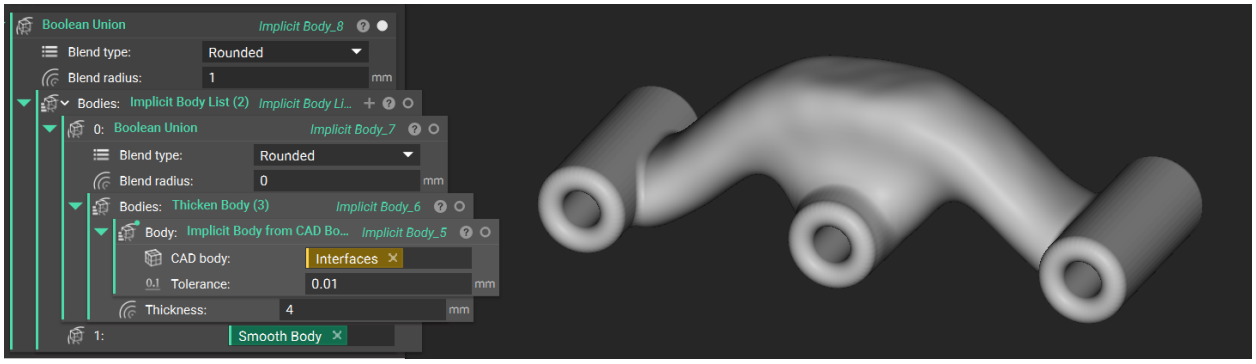


Step 3: Next, we'll want to recreate our interfaces at the three holes. Previously, in our Geometry section, we created this CAD Face List variable called *Interfaces*. We'll use an **Implicit Body from CAD Body** block, then a **Thicken Body** block to make these three holes into implicit bodies, and I'll set the thickness here at 4mm.

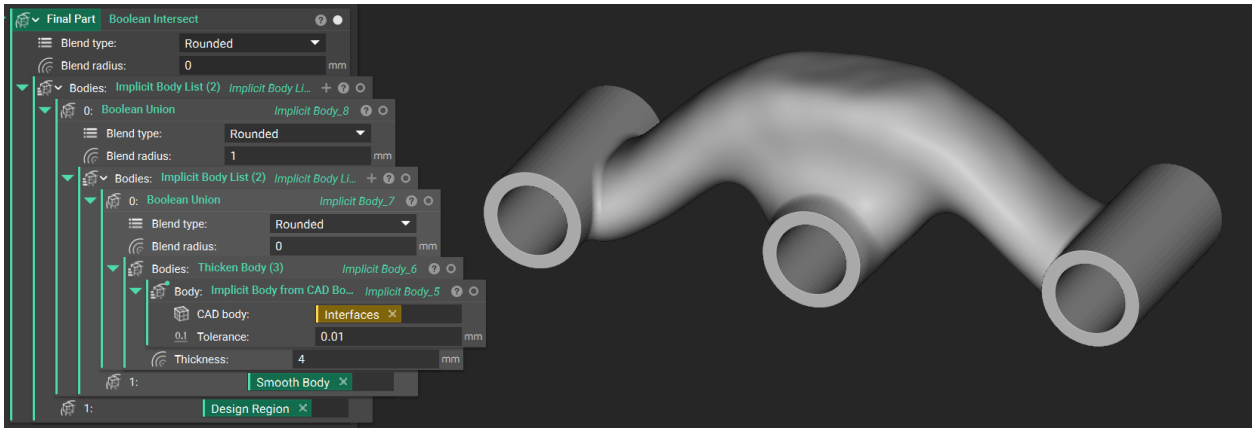
Then, we'll add this Implicit Body List to a **Boolean Union** block, so the three interfaces are now one implicit body.



We'll add another Boolean Union block to merge these three holes with our Smooth Body variable to make a single part with our interfaces and Top-opt results. To smooth the blend, set the Blend radius to 1mm.



Step 4: Finally, use a **Boolean Intersect** block to trim any excess material outside of the design region from our Thicken Body operation and to ensure the holes in the interfaces are the same size as in the initial design region. Drop the new body from Step 3 and the Design Region implicit variable into this block, right-click to make it a variable, and call it *Final Part*.


Final Part
Boolean Intersect
Blend type:
Rounded
Blend radius:
0
mm
Bodies:
Implicit Body List (2)
Implicit Body Li...
0:
Boolean Union
Implicit Body_8
Blend type:
Rounded
Blend radius:
1
mm
Bodies:
Implicit Body List (2)
Implicit Body Li...
0:
Boolean Union
Implicit Body_7
Blend type:
Rounded
Blend radius:
0
mm
Bodies:
Thicken Body (3)
Implicit Body_6
Body:
Implicit Body from CAD Bo...
Implicit Body_5
CAD body:
Interfaces
Tolerance:
0.01
mm
Thickness:
4
mm
1:
Smooth Body
1:
Design Region