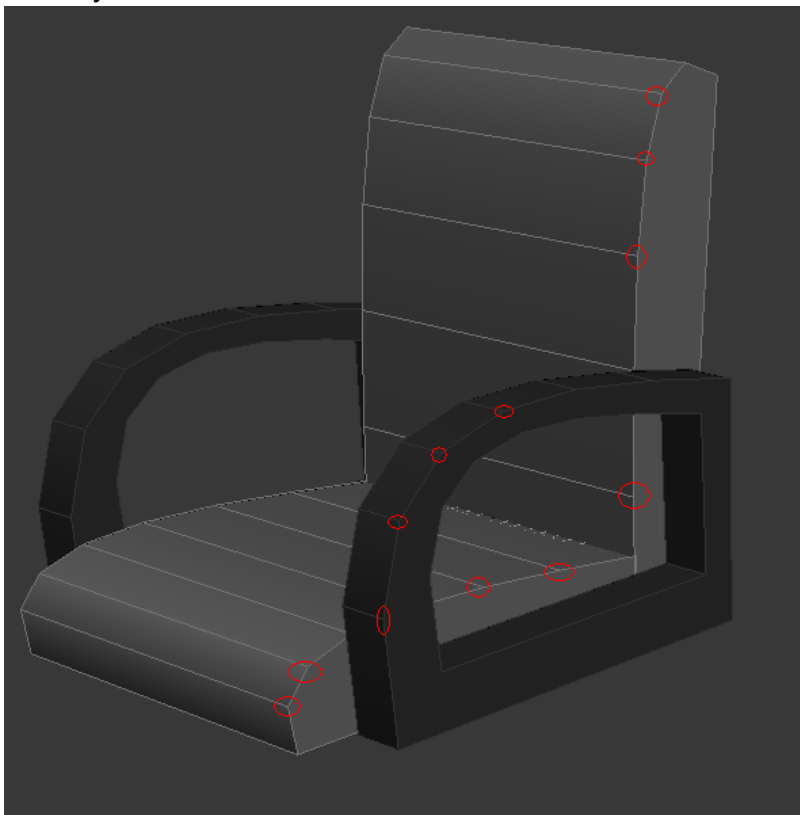


Fixing “orphan” vertices

PROBLEM

You extruded a shape from a spline and found out that you have vertex that don't connect in all 4 edges around it. That is a bad, bad, bad industry practice, and you should fix any instances of this in your upcoming modeling reviews.

In the example below, the vertex highlighted are connecting to 3 edges and not 4. This leads to “orphan” vertex and too much resolution on one side of the geometry, making it irregular and not acceptable in the industry.

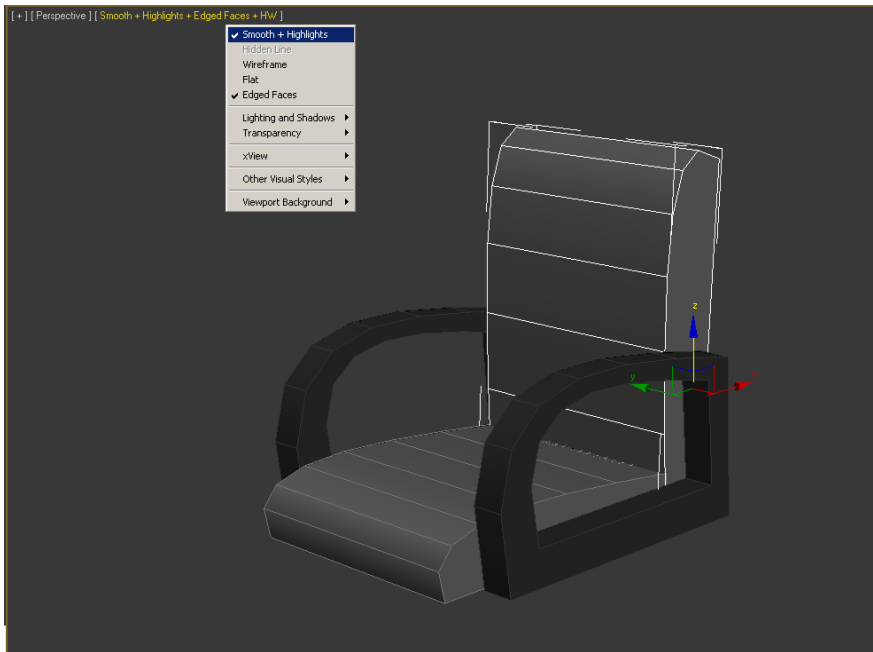


SOLUTION

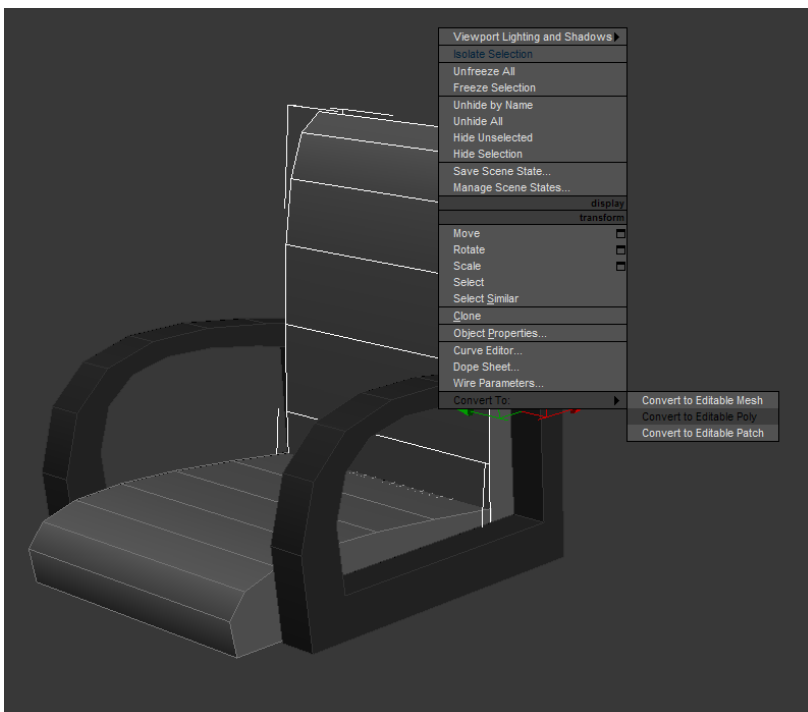
While it's great to start with the splines and extrude, this practice of leaving edges and vertex disconnected is something that you should not do, ever, ever, unless you know what you're doing and you can prove it to your production supervisor. ;)

Here's how to fix it. First, assuming that you just have the shape extruded from a spline, we'll need to convert that shape to Editable Polygon in order take advantage of the tools.

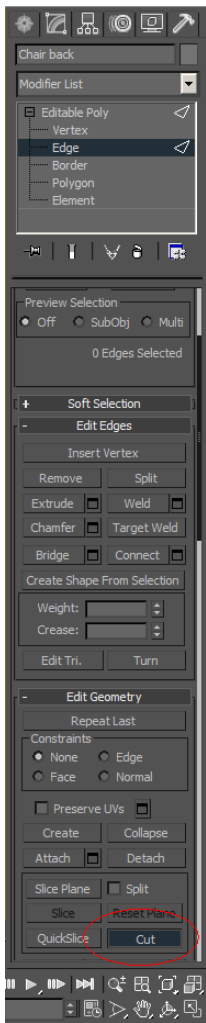
First, if you need to adjust the way you see your geometry and don't see the lines on the surface, go to the **PERSPECTIVE VIEW** and on the viewport name, **right click** next to the **PERSPECTIVE title**. Select **SMOOTH + HIGHLIGHTS** and **EDGED FACES**. That way you can see the surface, with the edges on it as it's shown on the image below.



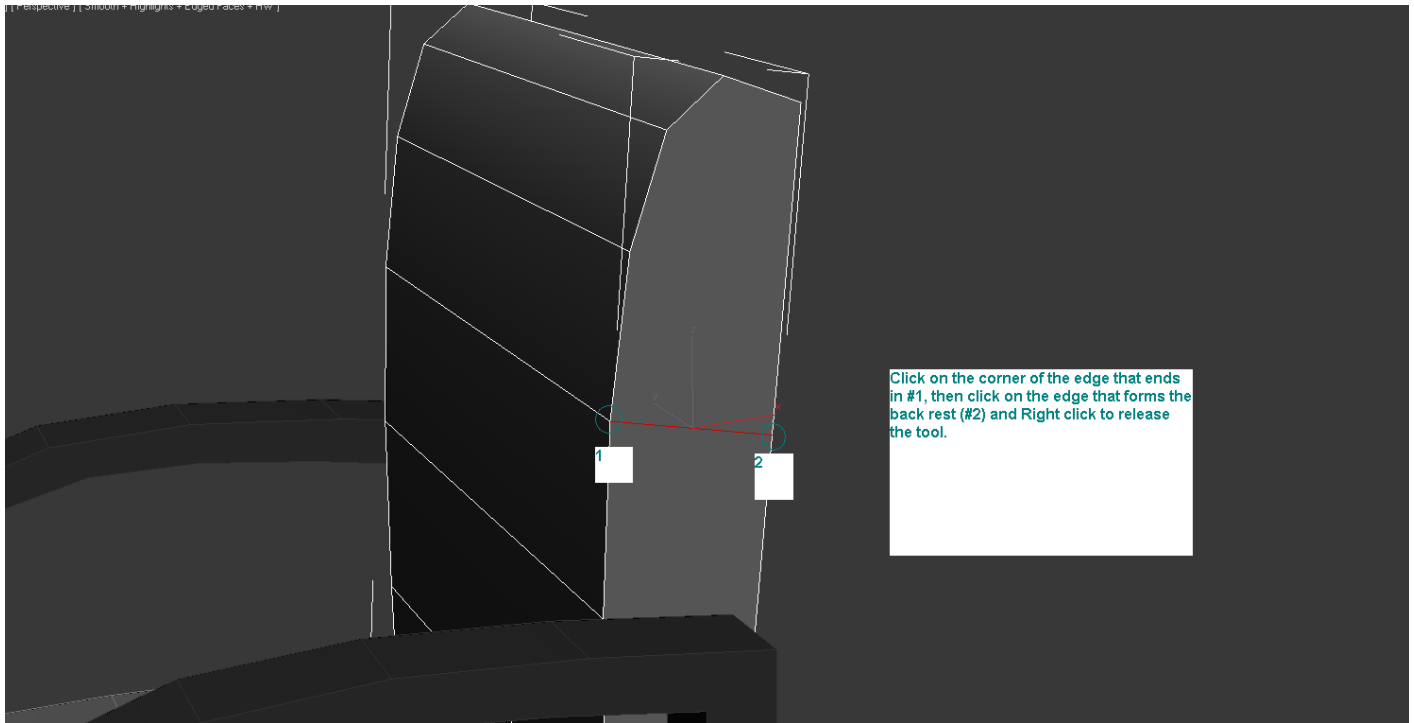
Next, convert the geometry to editable polygon. **Right click on the geometry** (in this exercise, we'll just do the back rest of the chair, because the arm rests and the seat can use exactly the same technique and it's easier to visualize that way). Select **CONVERT TO- EDITABLE POLY**. This will bring the tools you'll need to use.



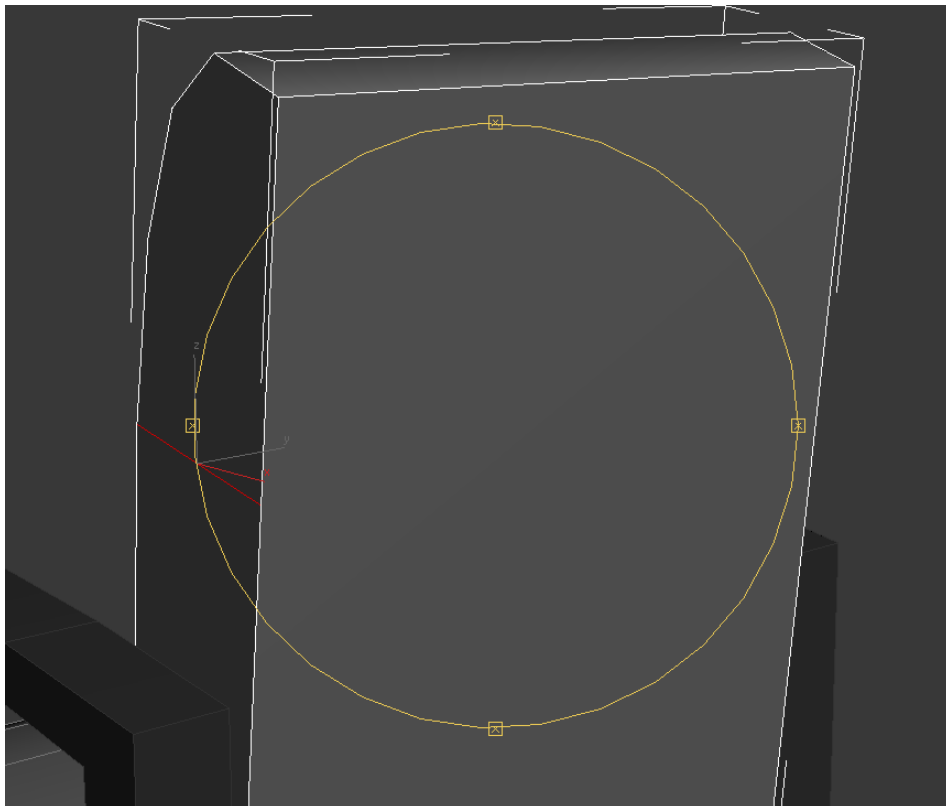
Press **2** on the keyboard or select **EDGE mode**. On the **MODIFY TAB**, scroll down to the **EDIT GEOMETRY** section. Turn **ON** the **CUT** tool.



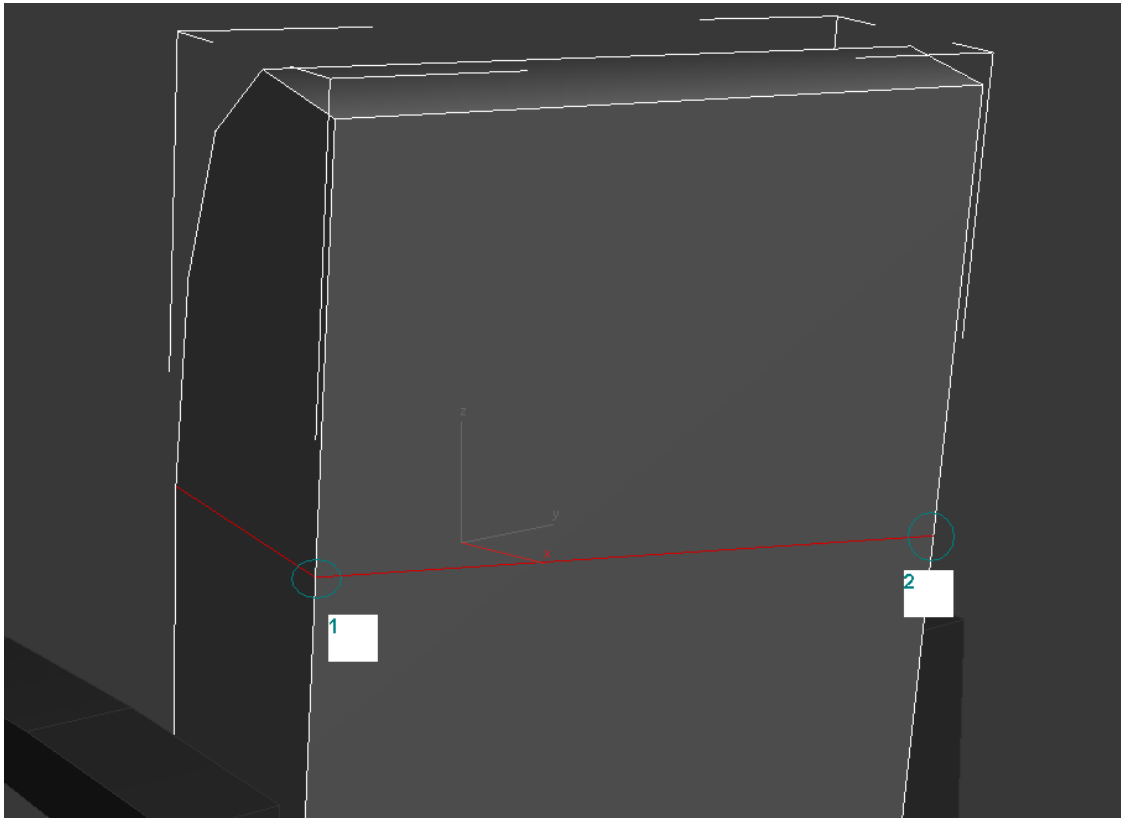
The goal will be to connect all the corners of the edges and go around the geometry to create a perfect loop. So, let's get started. Click on the first corner of the edge (see image below) with the tool selected, then click on the edge that forms the back of the geometry, and right click to release the tool. That will create an edge that you can edit later.



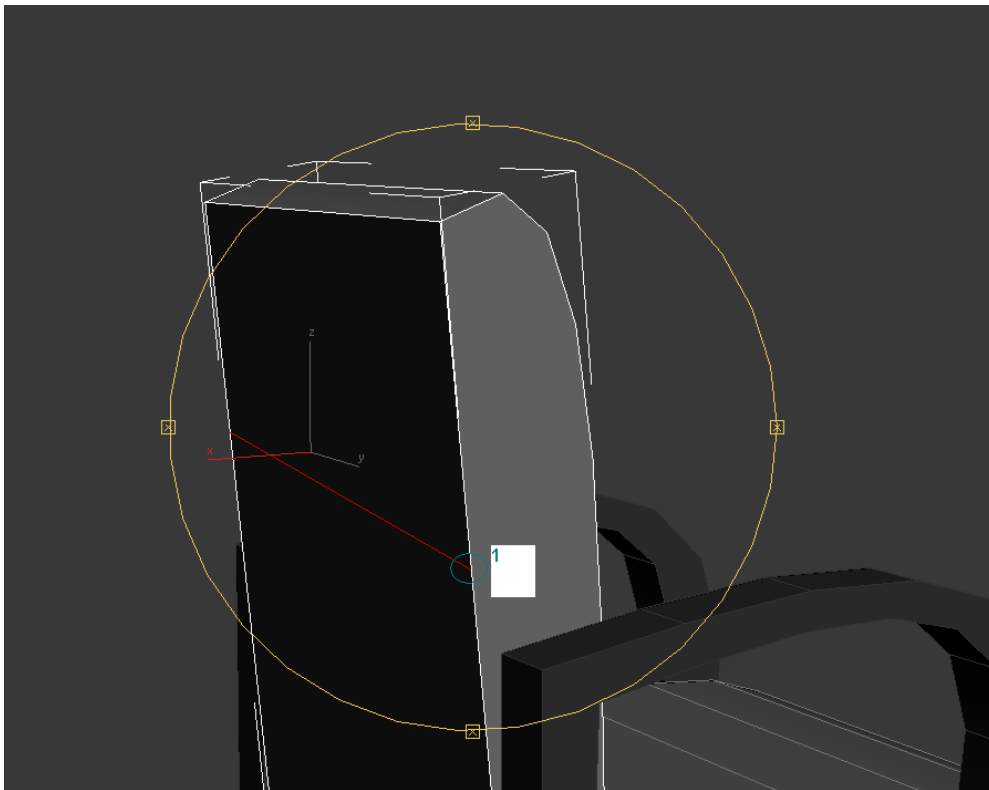
Next, I'll use the Orbit Sub object tool (CTRL-R) to rotate around the seat and see the back side as shown below.



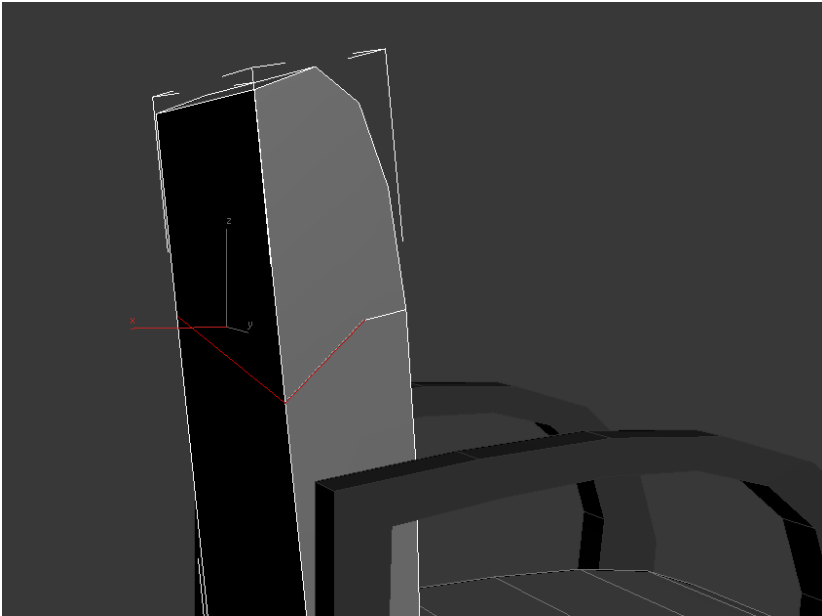
Then, select the CUT tool again and click on the corner (#1) of the edge you just created, and click on the right side of the back panel as shown below (#2). Right click to exit the tool.



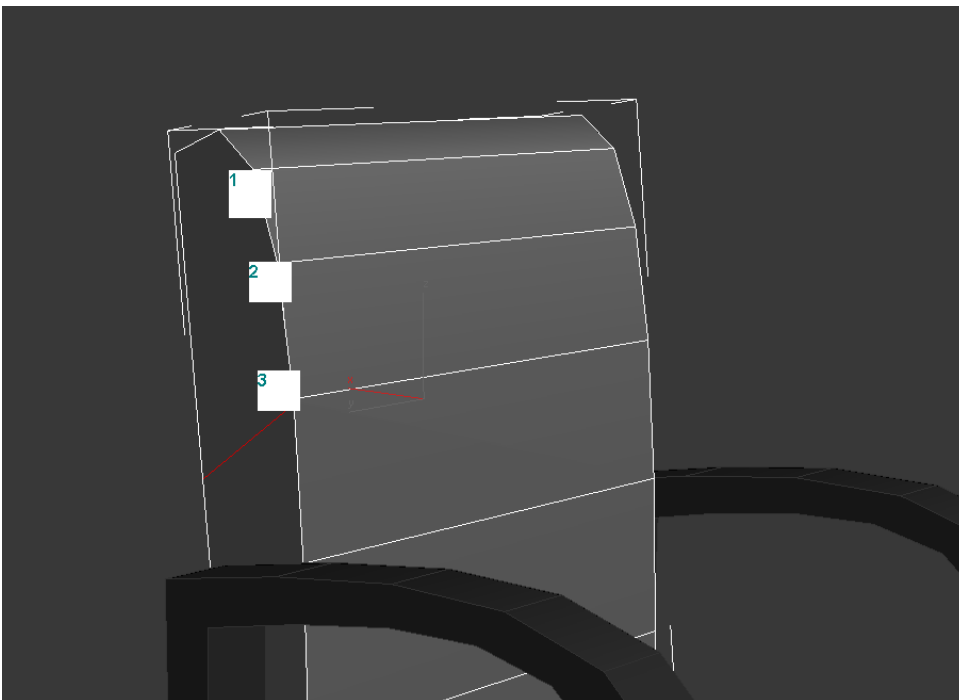
Once again, use CTRL-R to rotate the view and see the right side of the chair as shown below.



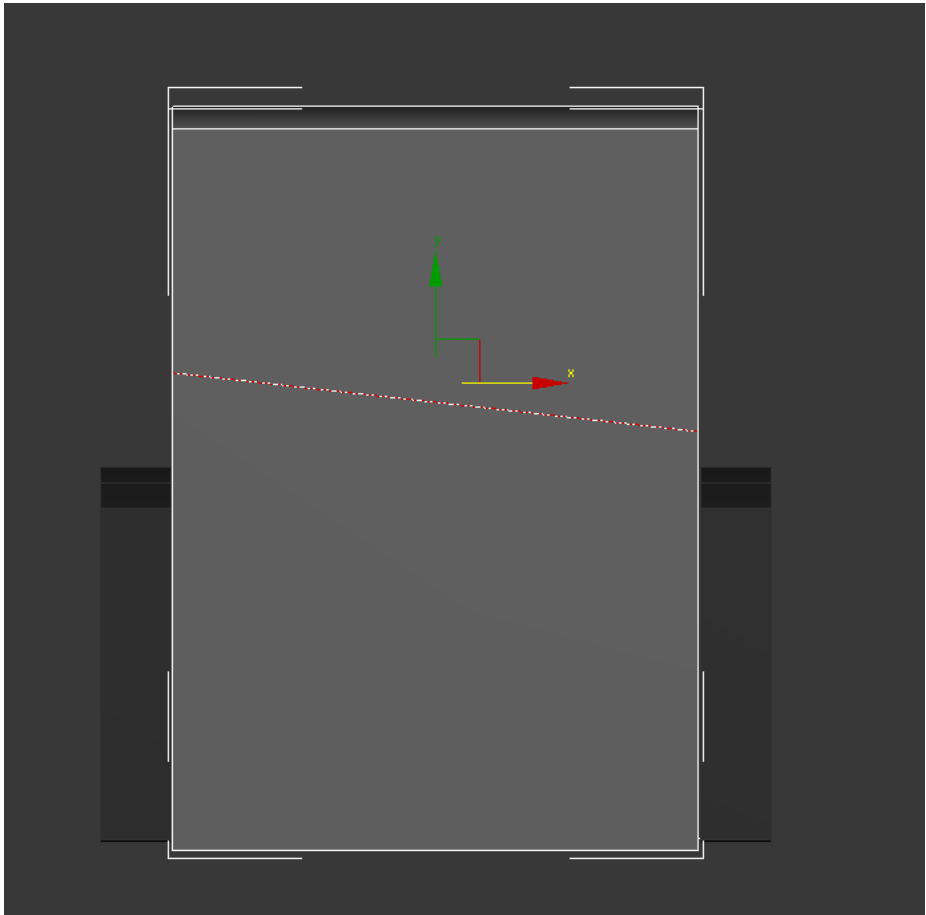
Next, you'll connect the last edge and fix any issues with alignment. First, go select again the CUT tool and click on the corner of the edge (#1 indicated on the image above).



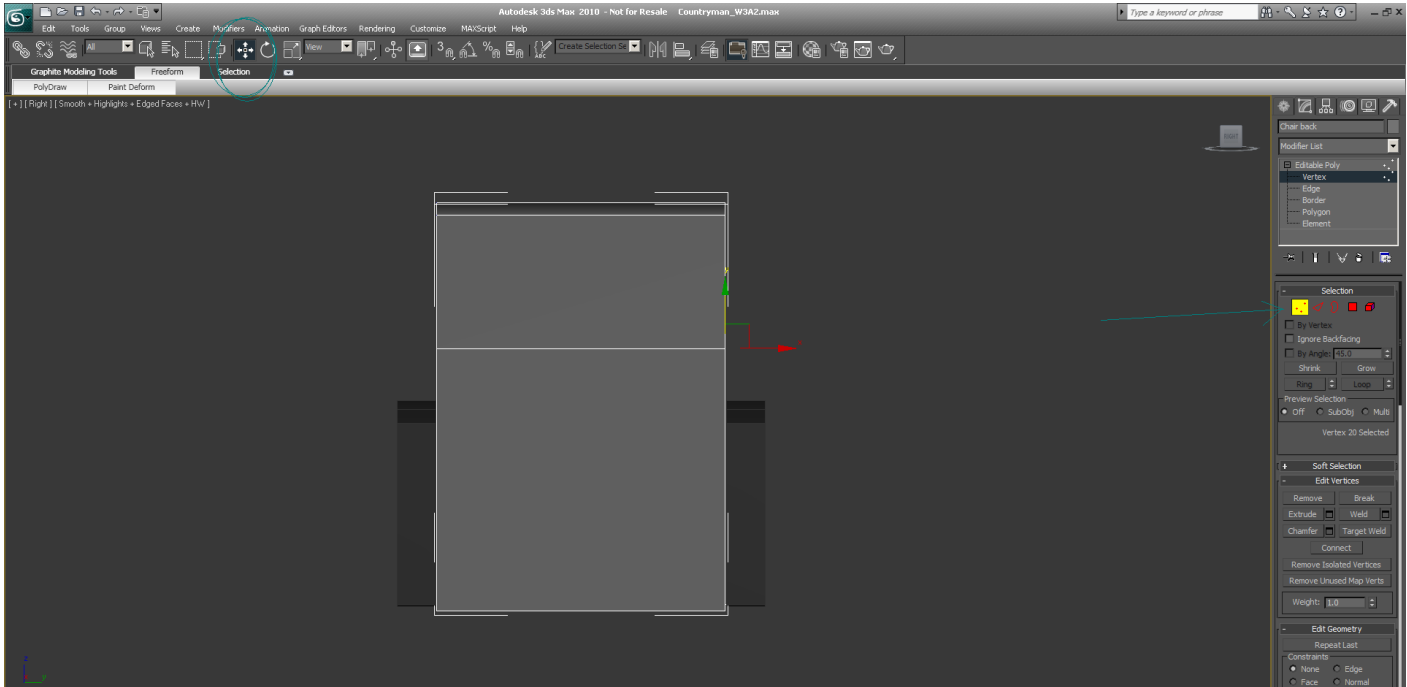
You will notice as you move the mouse over to connect to the right edge, that it snaps. The tool is trying to connect that edge you're creating with a previous vertex you have on the front of the geometry. Move the tool to about the 3rd edge from top to bottom, to match the one where you started. Use CTRL-R to rotate and UNDO if necessary or if you click on the wrong edge. See the image below for the view from the front.



Now, you might notice that the edge runs way to low on one side than on the other. No worries! Go to the back view of the object, select the vertex (1 on the keyboard and V for move tool), and move it up until you get a straight line.

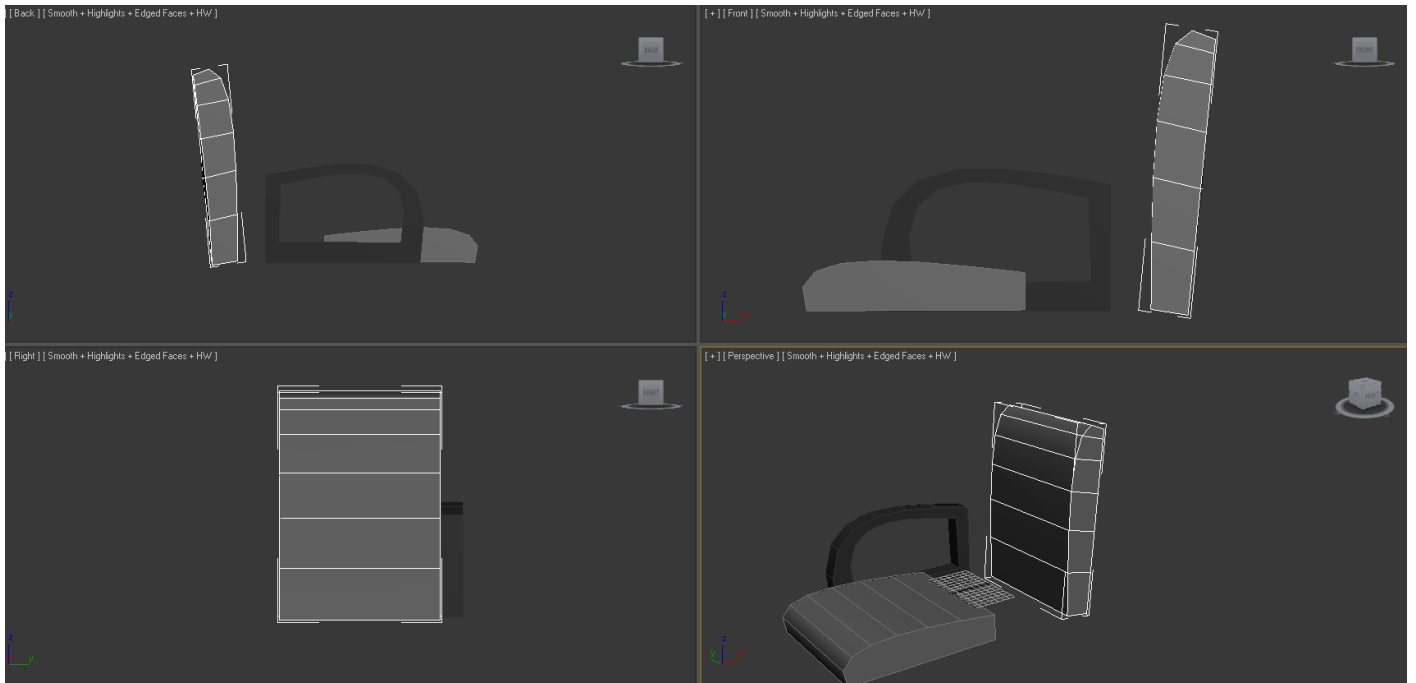


The image above shows the back edge, crooked, and below, after selecting the vertex on the right and moving it up. Nicer, uh?



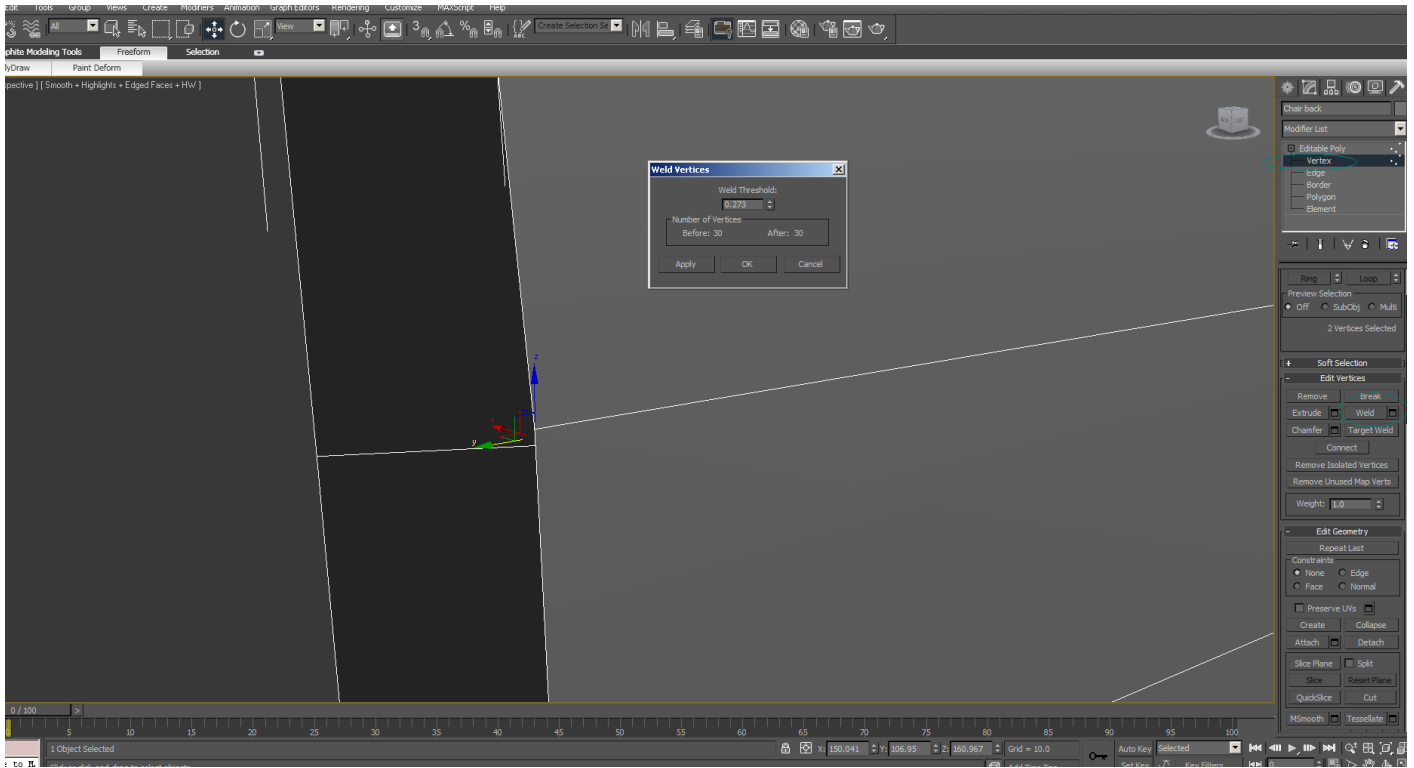
Next, you'll repeat that process for all the edges as shown below. Remember to go all the way around.

See the image below for reference. Don't forget to go to the back of the geometry and make them straight. That shows professionalism, instead of crooked lines like the first image on the page before this one.

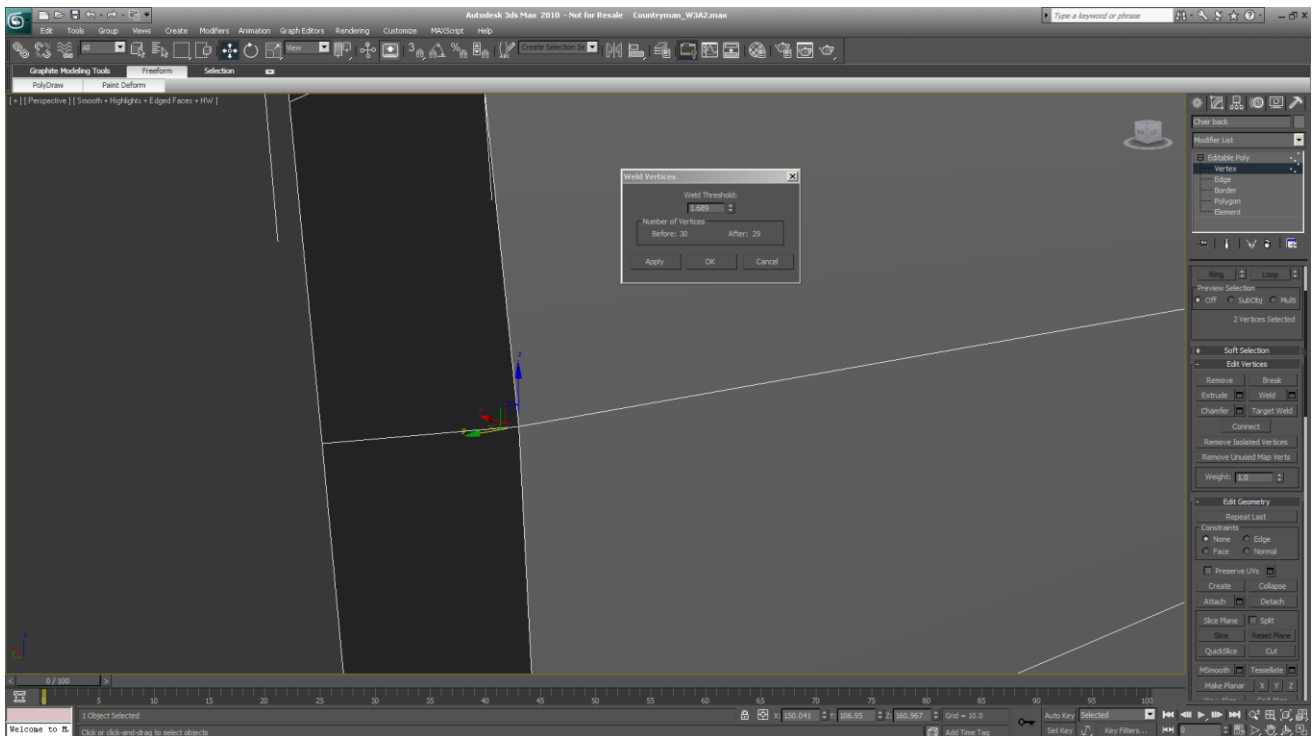


I turned OFF the grid by pressing G on each viewport so that you can view these better.

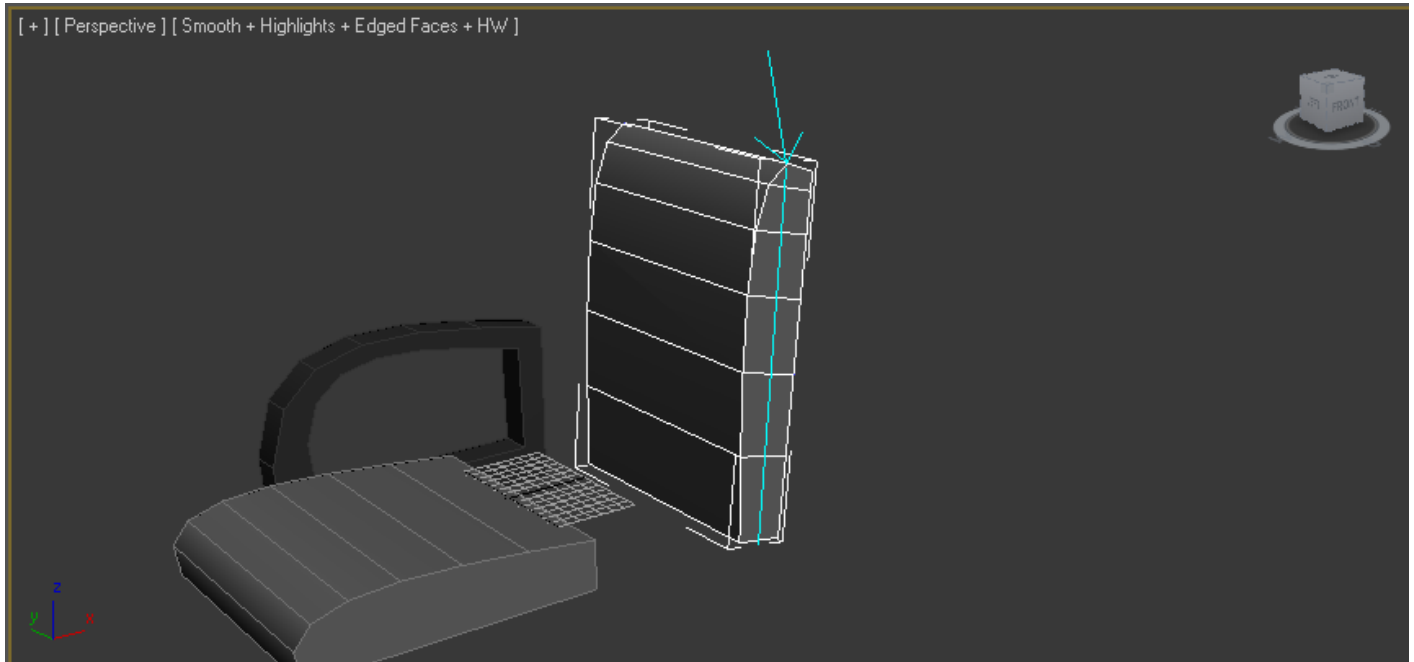
If for some reason, you have a situation where you try to connect the edges and they don't you can always weld the vertex. See the image below for an example.



The two vertex near the move tool aren't connected. So, I first selected them both, then went to vertex mode (1 on the keyboard) and then went to the check box next to WELD under the EDIT VERTICES section. Then, the spinner next to the Weld Threshold value, I moved it up as high as needed until the two vertex welded (snapped together) as in the image below.



Finally, you might notice that at the top of the geometry, the same thing happens with one of the edges, which has corners that don't connect. To fix that one, just use the same CUT tool, but this time, go around the other way to complete a whole loop around the edges.

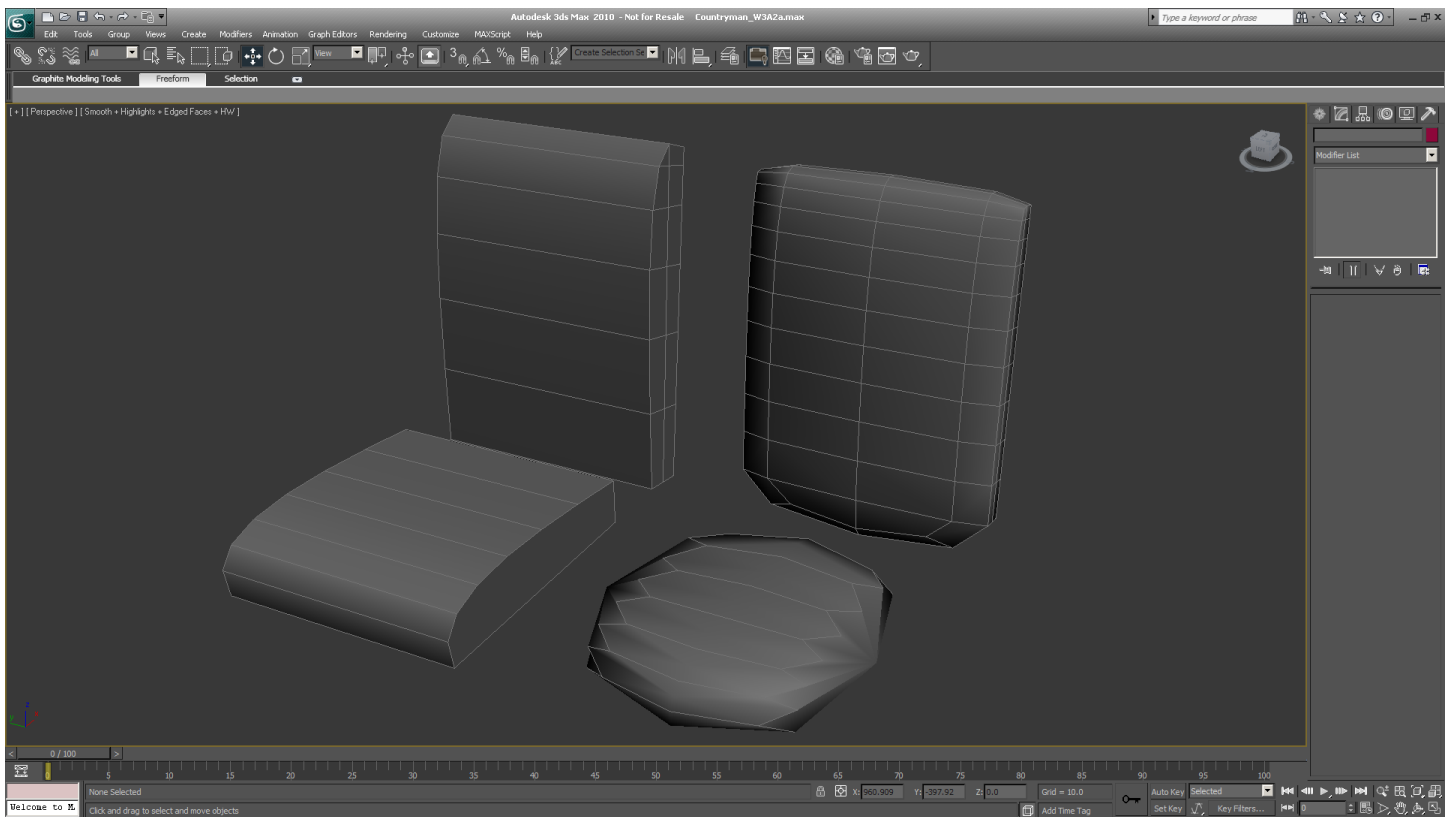


After this, just add the TurboSmooth or MeshSmooth modifiers, and if you got an even, nice geometry, you did a good job. For the arms, I would do the same, as well as for the seat cushion.

FINAL RESULTS

So that you have an idea of how many problems you can have with faulty geometry in the future, see the example below. The images on the top is the one I edited as an example. The one on the top left, shows the original geometry, with the cuts we just made. The one on the top right, shows the geometry with a TurboSmooth modifier. See how nice and even it looks.

The images on the bottom are the original ones with the “orphan” vertices. The one on the bottom left shows the geometry with the orphan vertices, while the one on the bottom right, shows that geometry with a TurboSmooth modifier. See how many problems the geometry starts showing just because of that.



IMPORTANT NOTE:

It's important to start doing the Good Practices in the industry if you want to stand out there. Besides, when loose vertices like these are left in geometry, it's seen as a NO by professionals, looked down, frowned upon, and will cause texturing and rigging/animation issues in the future.