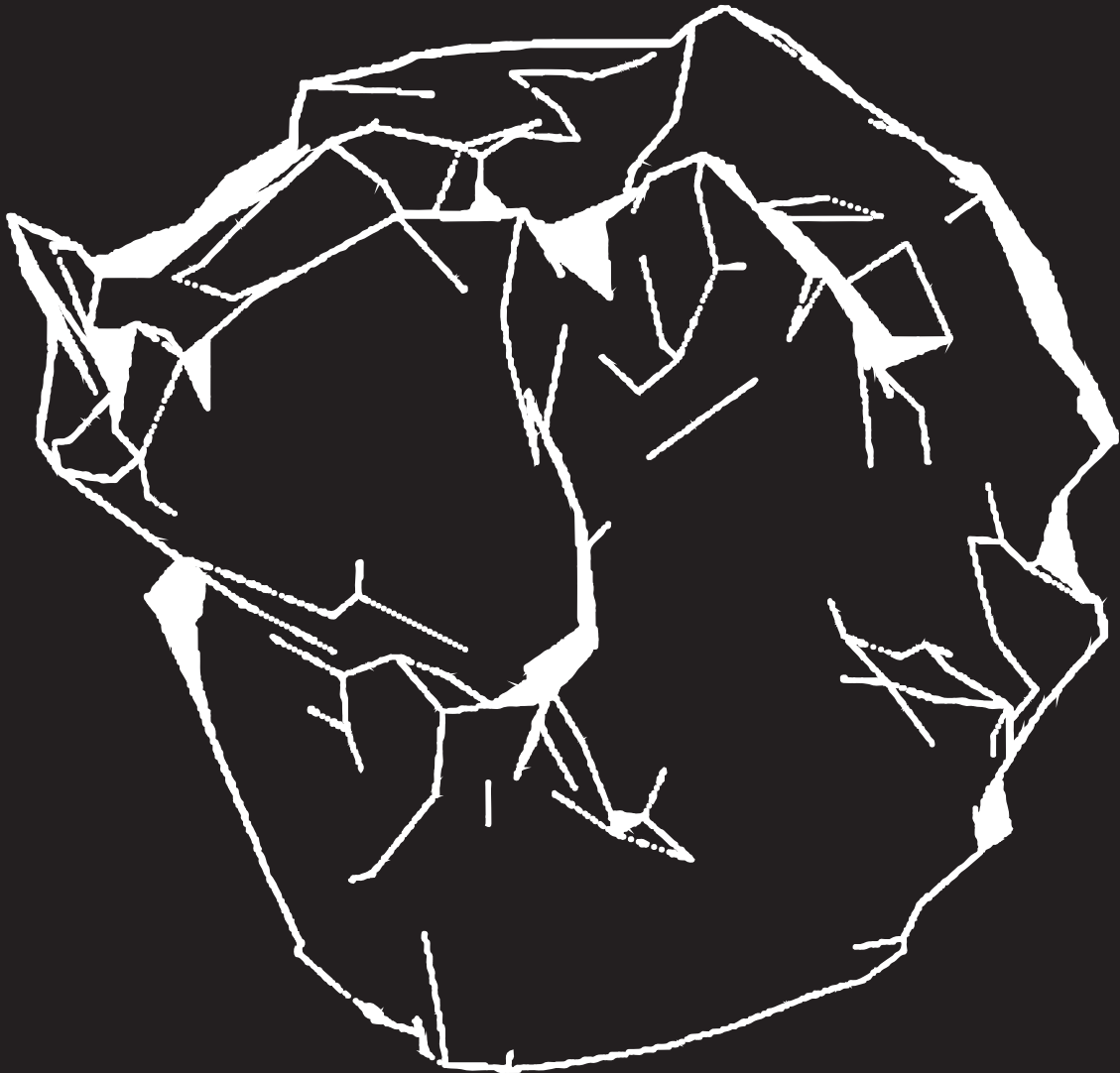


3D SCAN

Material and Technology
Prof. Dr. Manuel Kretzer



What you are about to learn:

How to transform images into a 3d object, and then manipulate it into a product ready for 3D printing.

Further info and credits

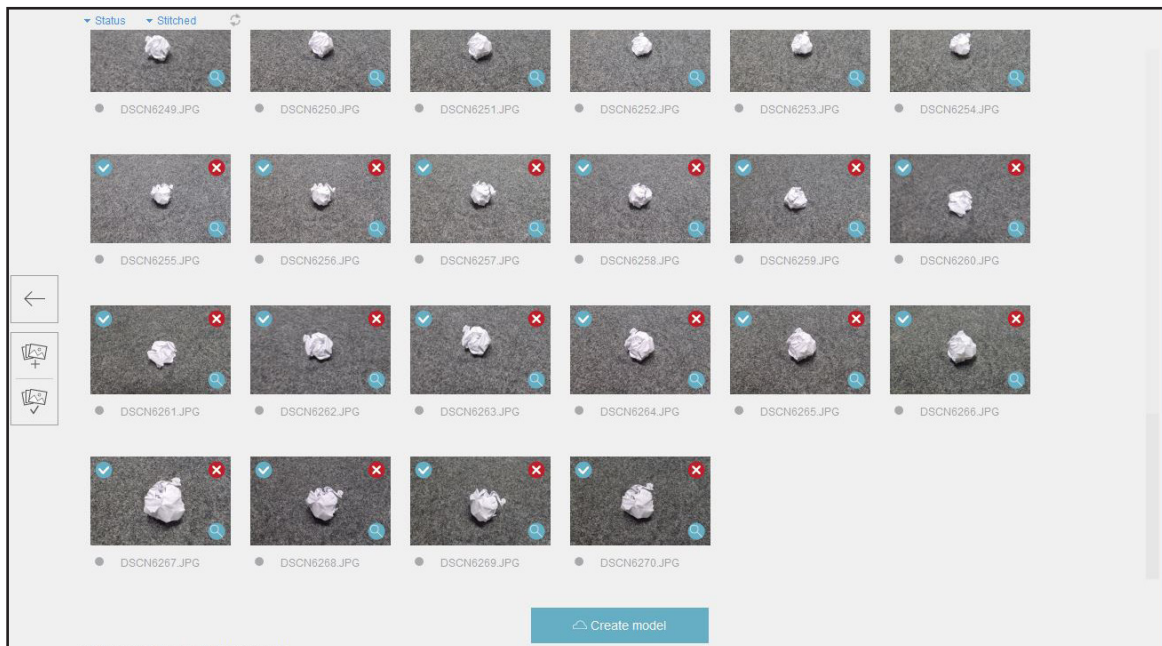
For more tutorials visit:

<https://www.rhino3d.com/learn/>

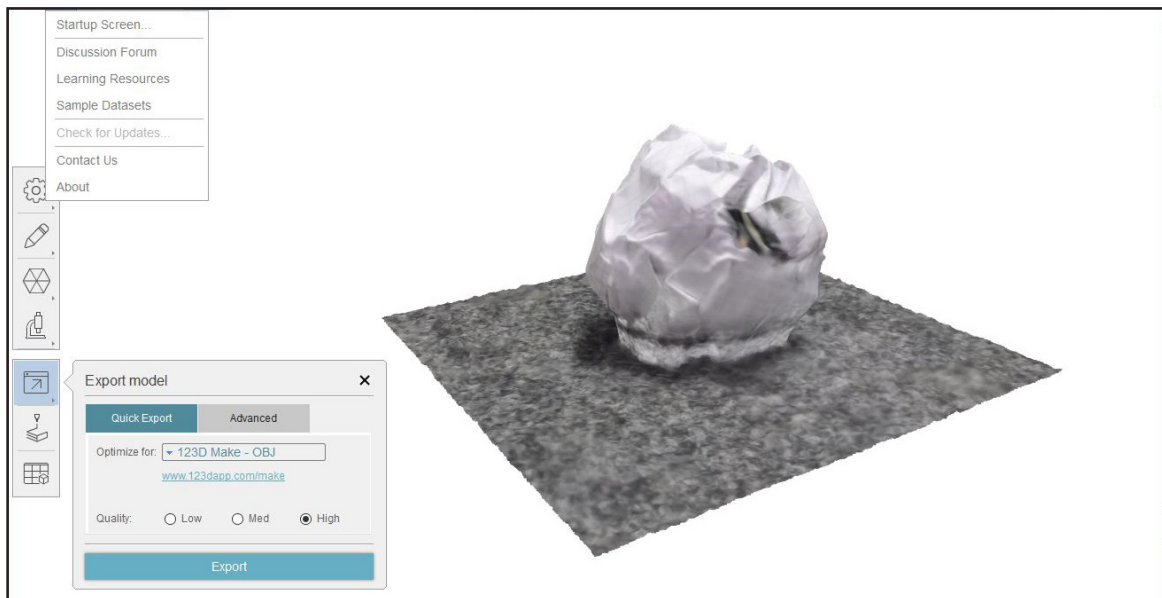
<https://www.rhino3dhelp.com/>

Youtube is also a great source for Rhino tutorials.

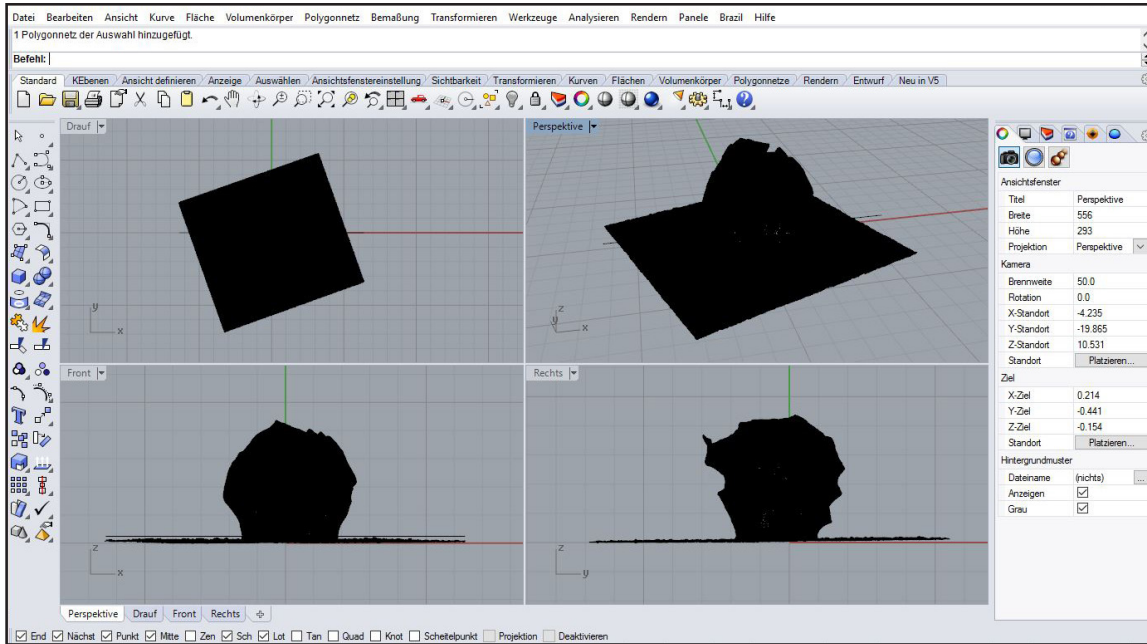
- 1 Take multiple pictures of your object from different angles, watch tutorial „How To Take Photos” under <https://remake.autodesk.com/ressources> and import them into ReMake. Choose create 3D Model offline if you got more then 16GB RAM on your machine or online if not. Download the finished model.



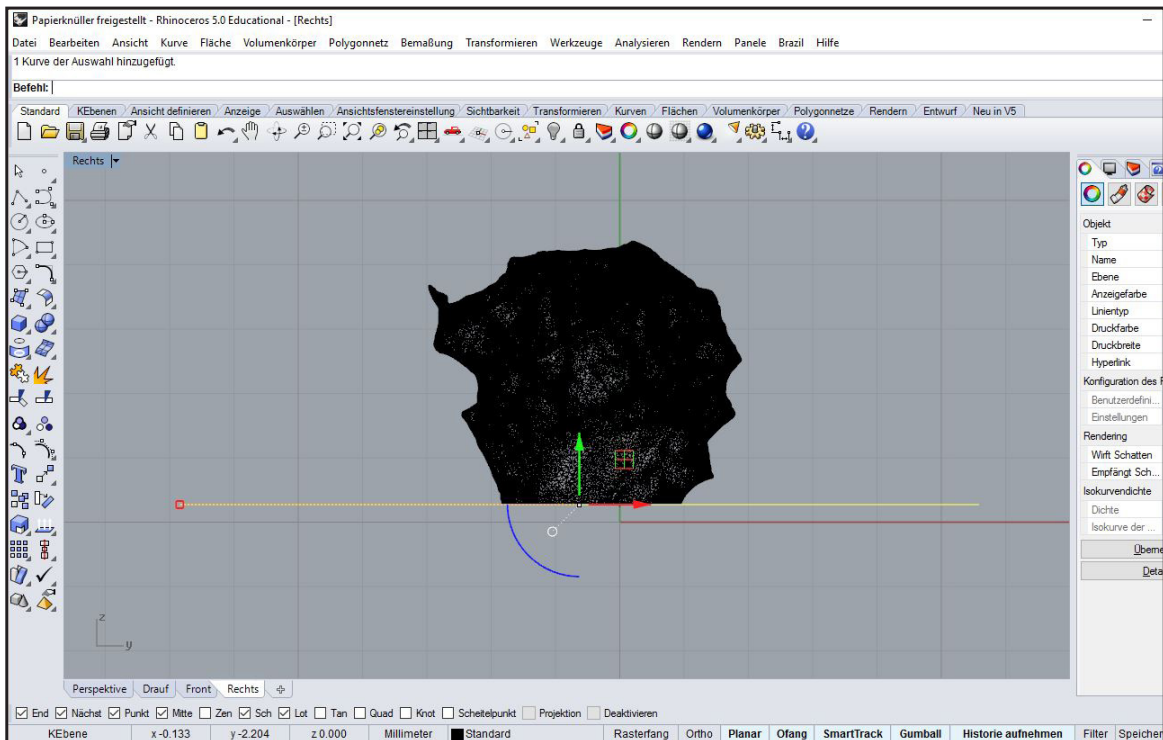
- 2 Delete surplus polygons by selecting them and clicking DEL. Export your geometry as 123D Make-OBJ.



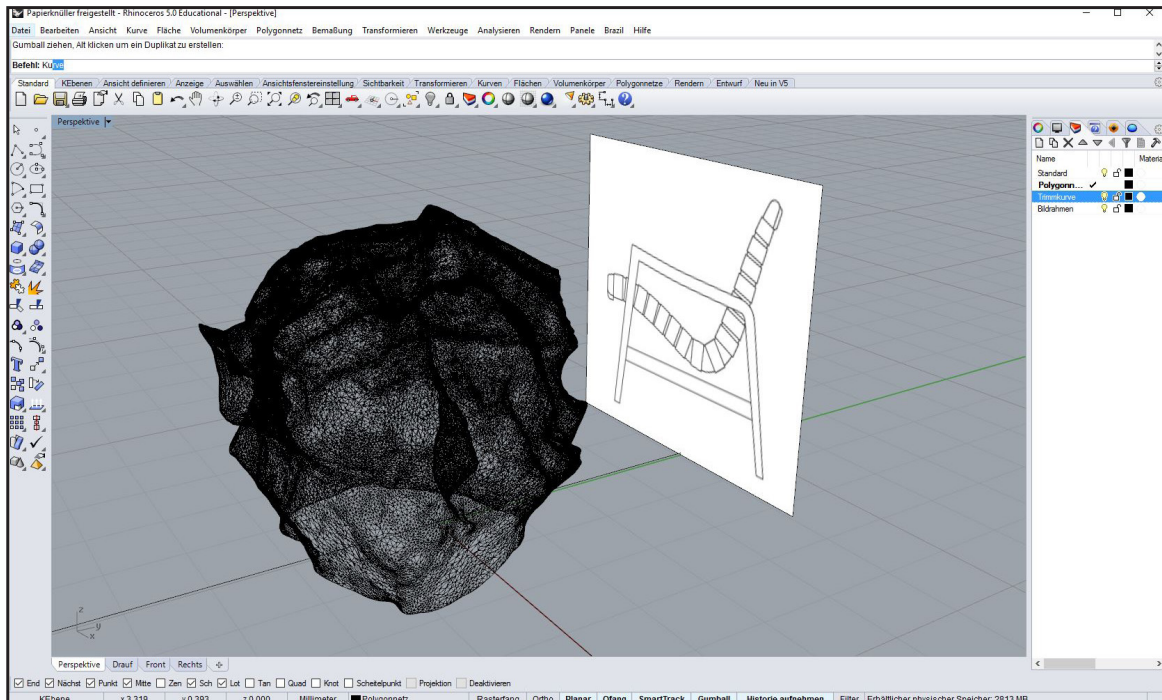
3 Import your geometry into the Rhino-Workspace.



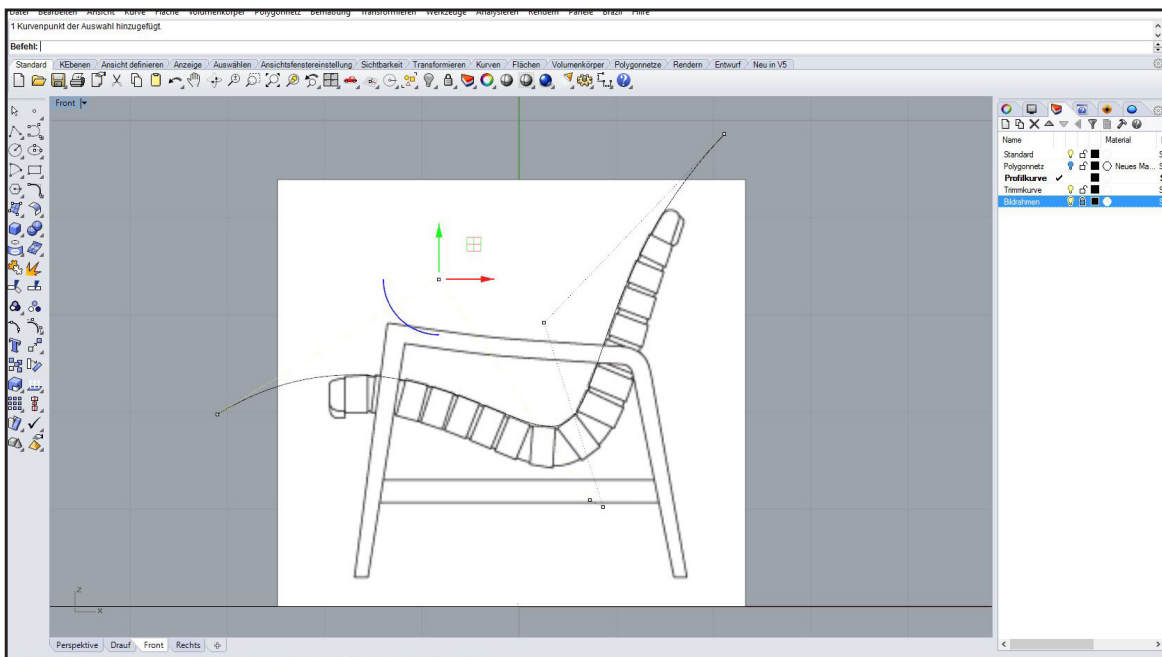
4 Draw a horizontal line and trim the excess part of your geometry, using the command `_MeshTrim`. Close the mesh by the command `_FillMeshHoles`.



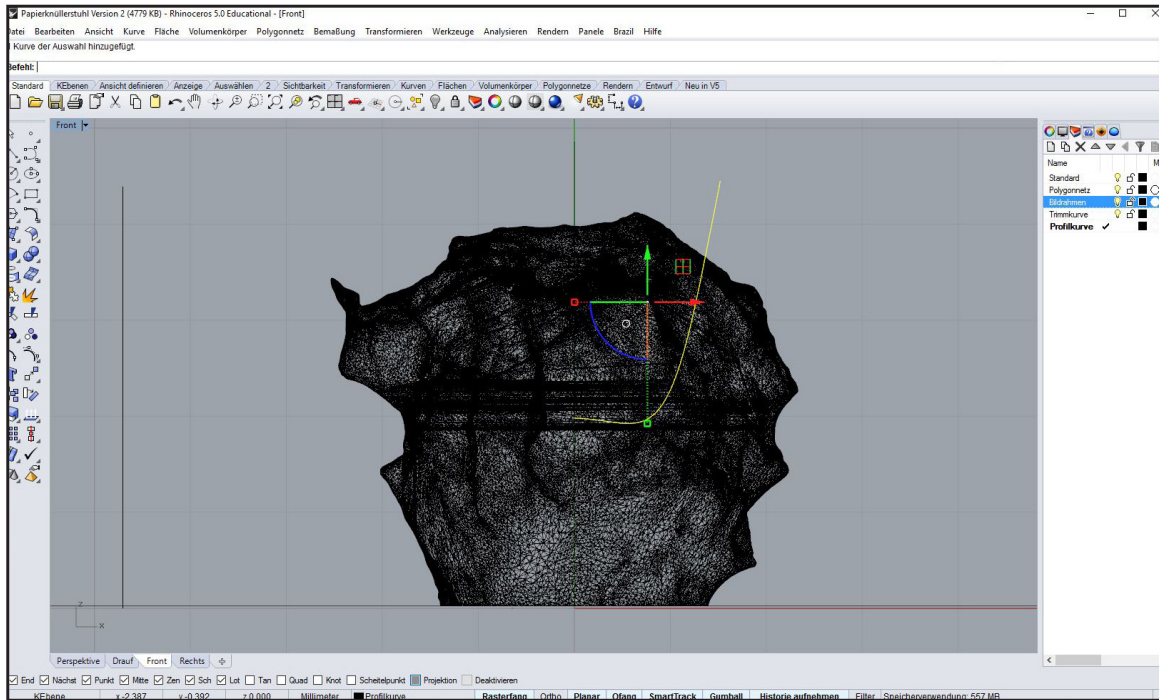
- 5 Using the command `_PictureFrame`, import a picture of a chair you like into the Rhino Workspace. Additional info can be found here: <https://wiki.mcneel.com/rhino/pictureframes>
Scale it and place it behind the mesh.



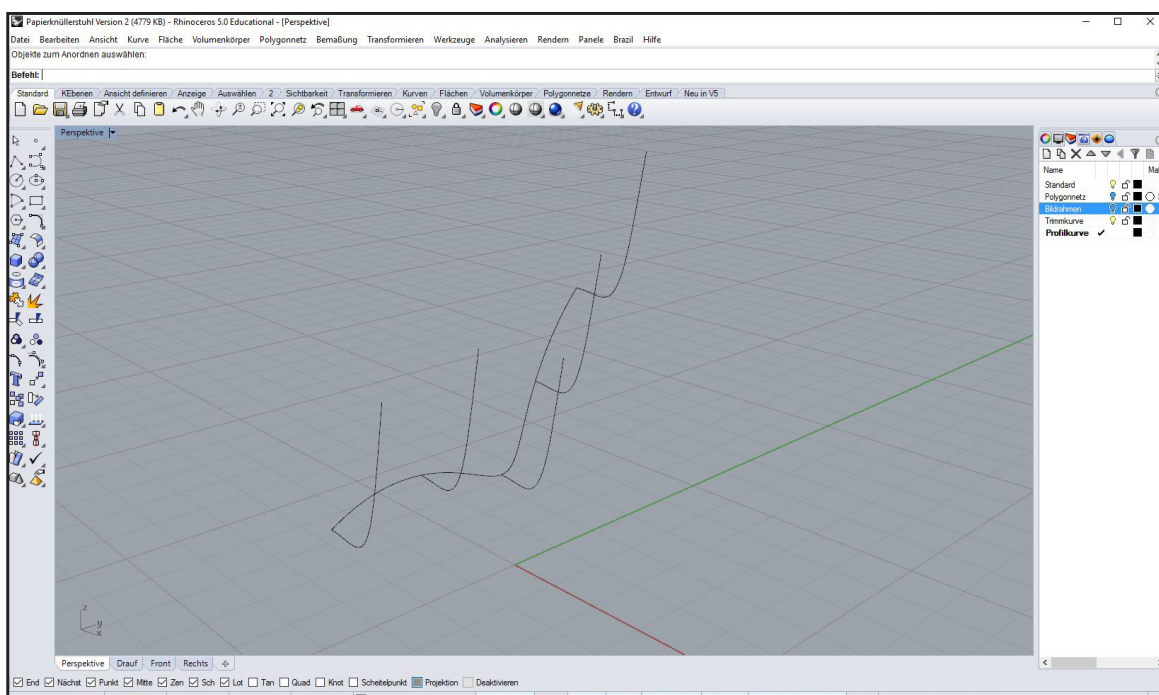
- 6 Redraw the profile curve of the chair with the command `_Curve` in the side view. Edit the curve by dragging the control points until it matches the shape. You can turn the points on with the command `_PointsOn`. Maybe put the mesh on an extra layer and hide it in order to improve visibility.



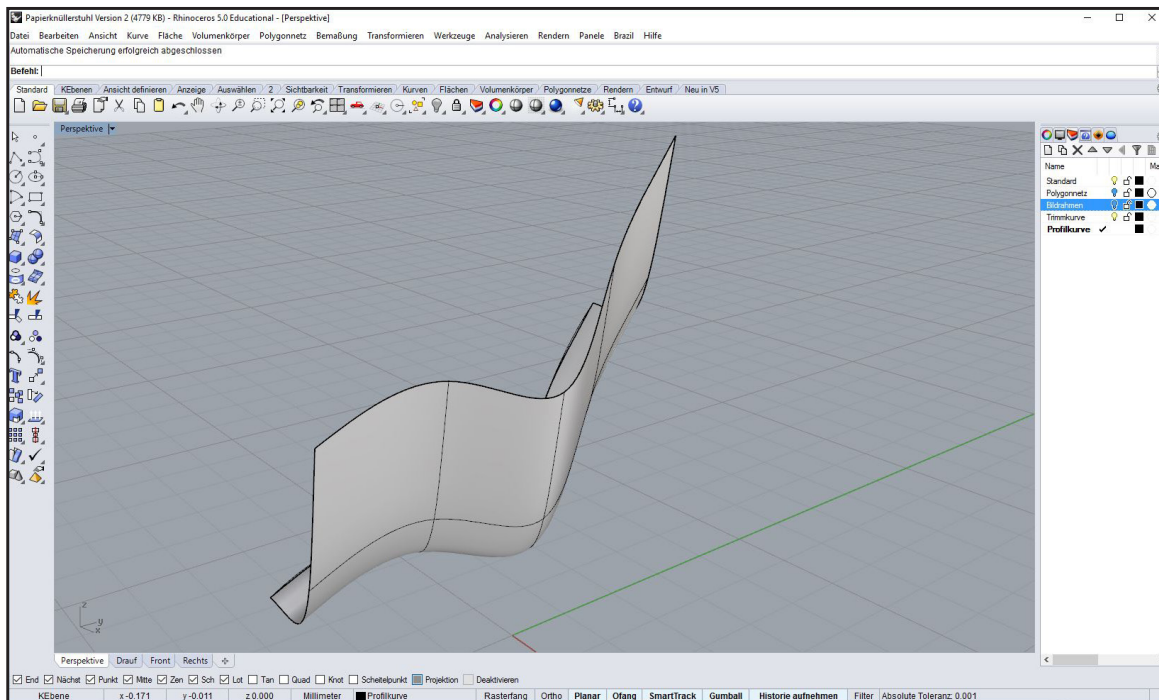
- 7 Draw the cross section curve of the seating surface in the front view, using the command `_Curve`. Only draw one half of it. Use the Object Snap End to snap the first point of the curve on the end of the profile curve of the chair. It does not matter on which end it is. However it is important that the second point of the curve is in line with the first point, because then the surfaces we will create out of the points will be tangential at the transition.



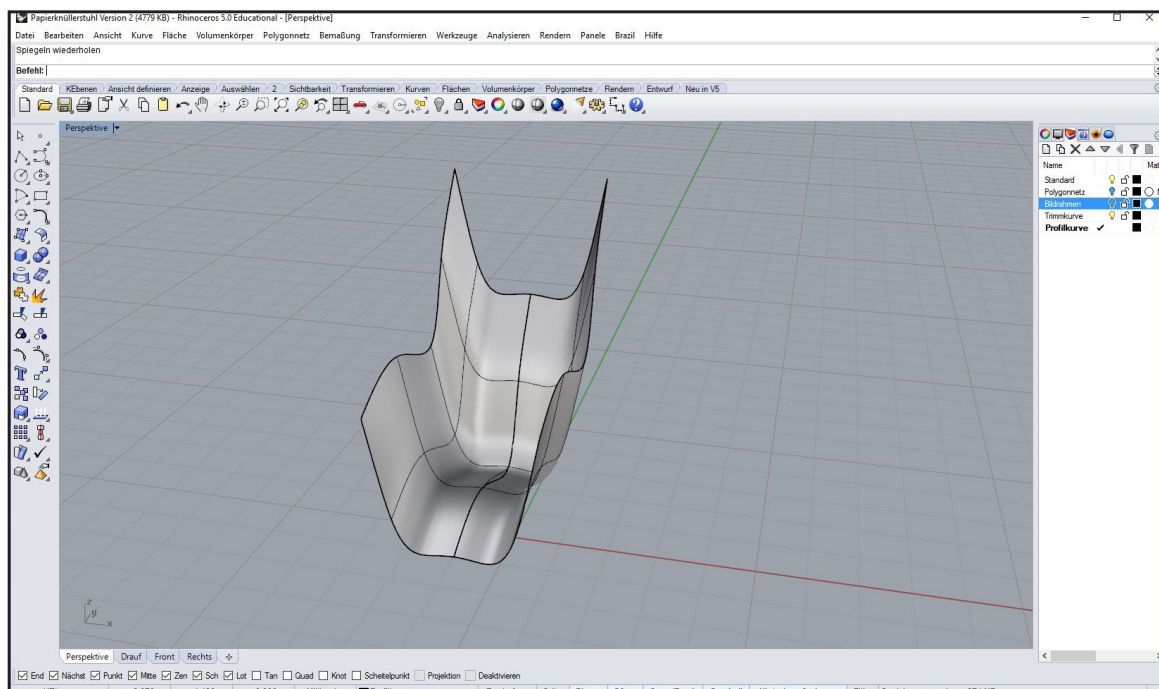
- 8 Now execute the command `_ArrayCrv`. Select the cross section curve as input curve and the profile curve as sweep curve. For the number of copies enter at least 5. The curves should be parallel to the construction plane. It is recommended that you hide the mesh and the pictureframe in order to improve visibility.



- 9 Loft the cross section curves by the command `_Loft`. Activate construction history before lofting. Make sure you select all curves at the same place.



- 10 Mirror the surface along the profile curve by the command `_Mirror`. It is very important that construction history is activated before you execute the command.

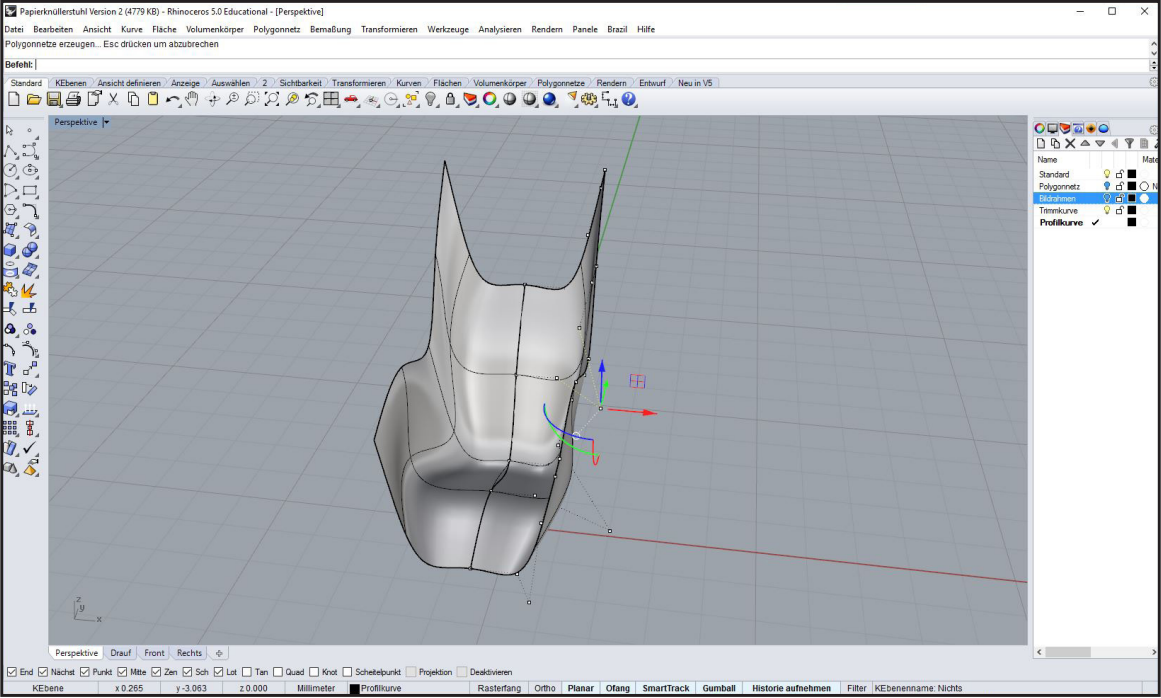


11

Activate the points of the cross section curves by the command `_PointsOn`. Drag the points in order to explore the shape. Now the surfaces should be updated automatically by construction history.

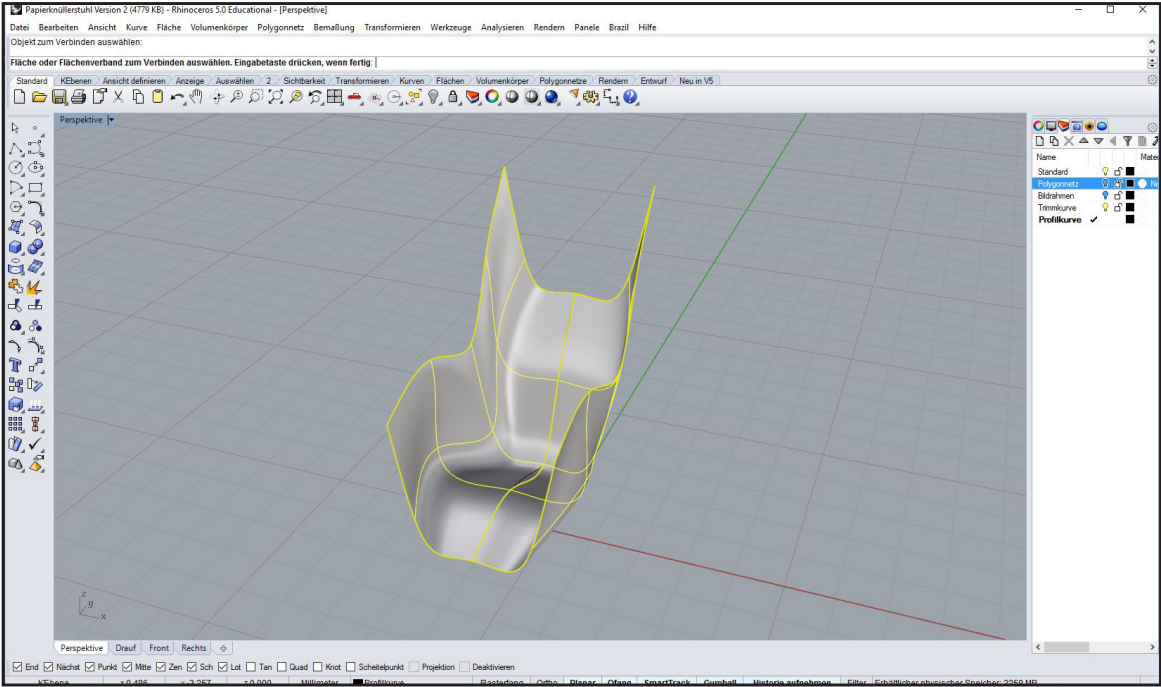
Do not modify the first two points of each curve in order to maintain tangentiality between the surfaces.

Maybe show the mesh from time to time in order to check proportions.



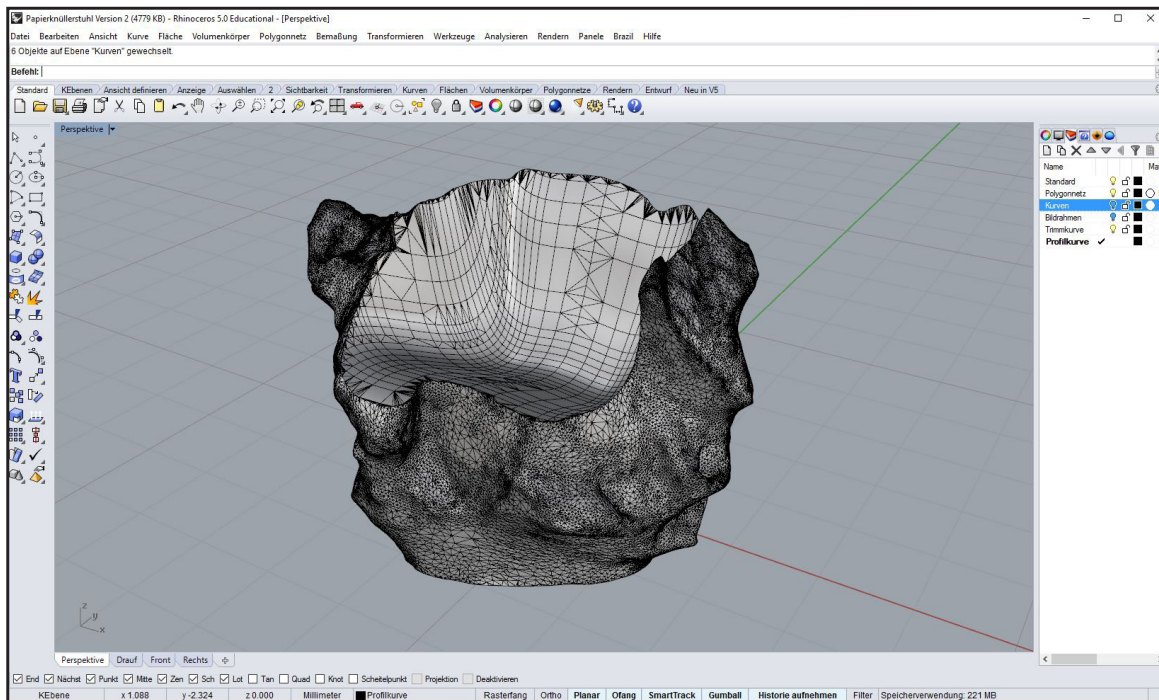
12

When you are satisfied with the shape you created, join the two surfaces by the command `_Join`.



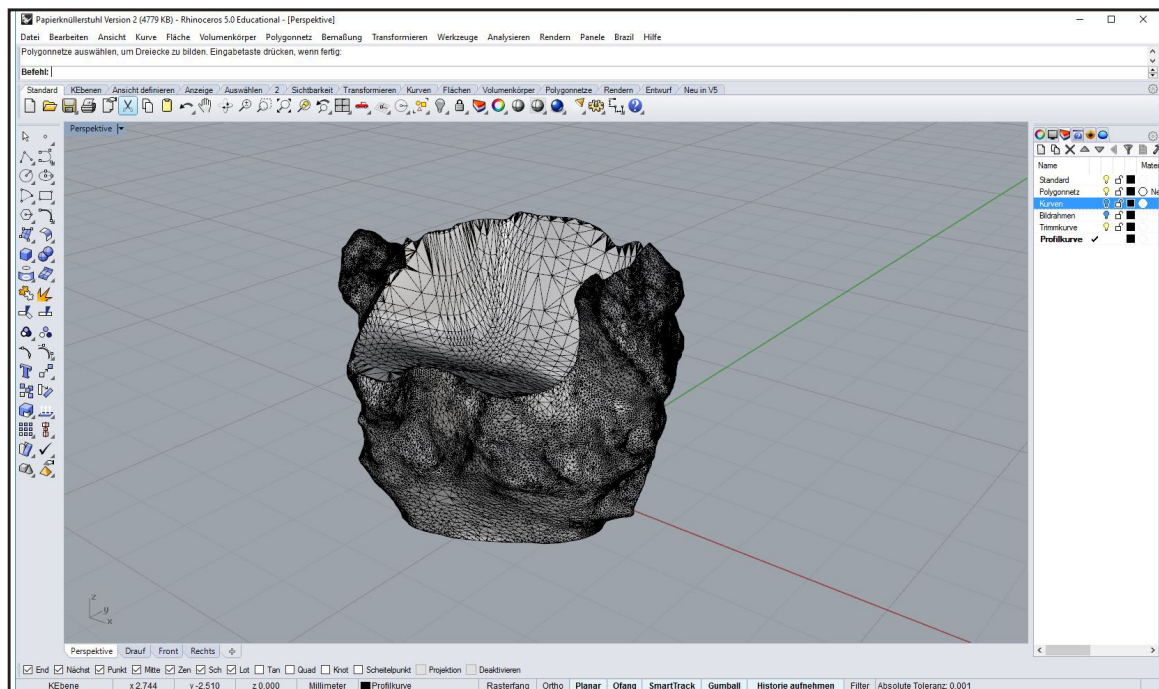
13

Subtract the joined surfaces from your mesh by the command `_MeshBooleanDifference`. Eventually join the meshes by the command `_Join`.

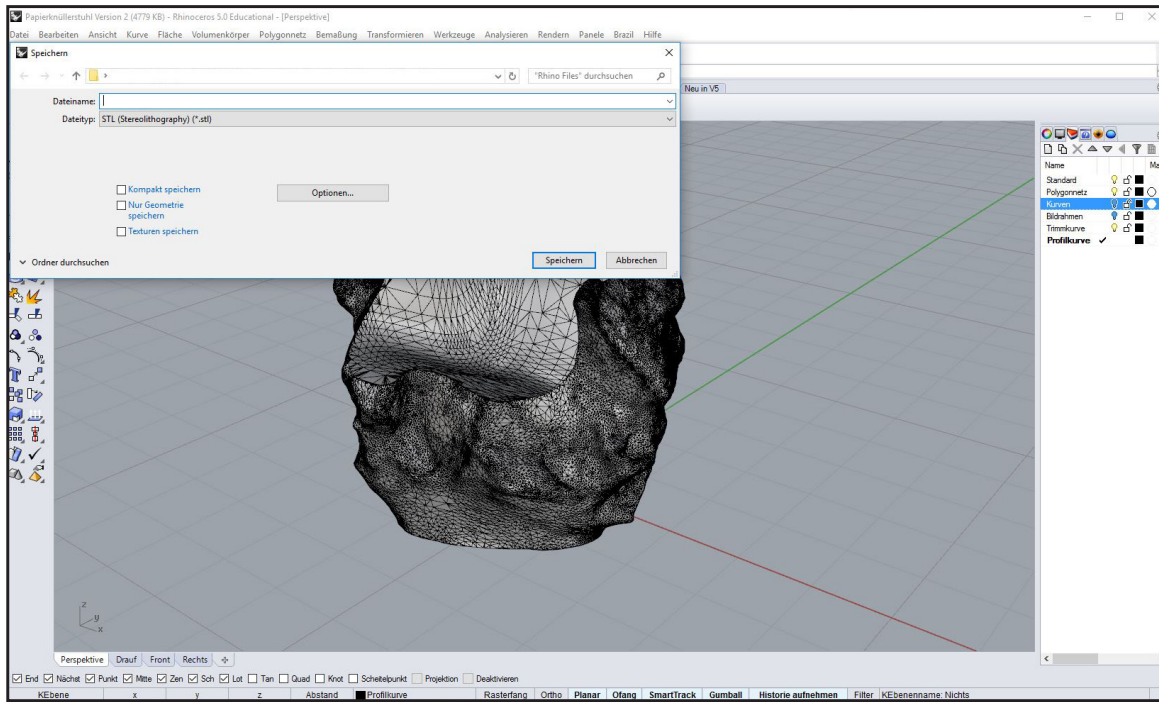


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Triangulate the mesh by the command `_TriangulateMesh`.



15 Export your model as a stl. file for 3D printing.



finished object



