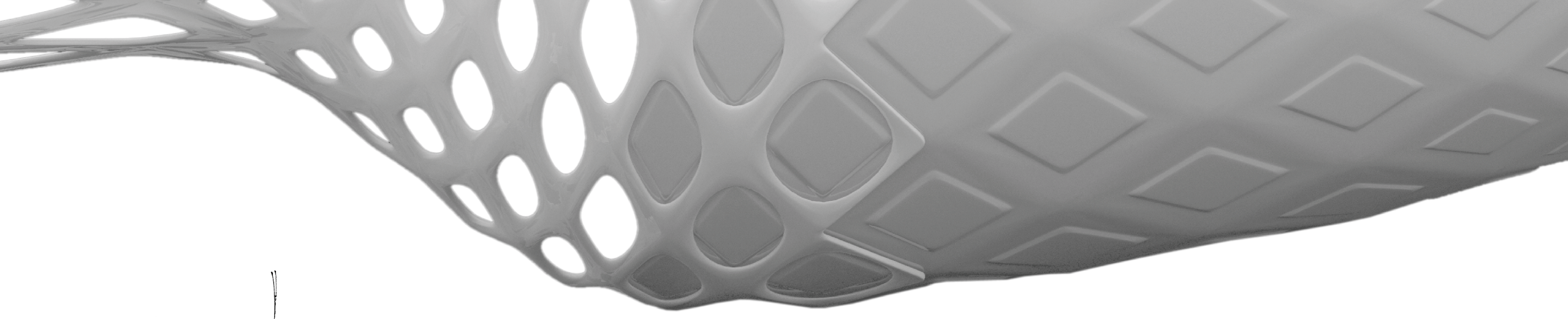
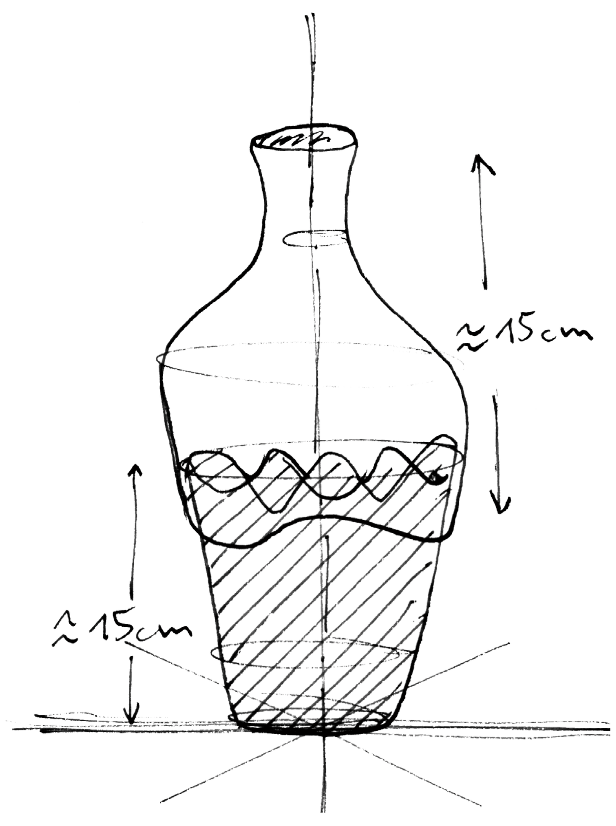


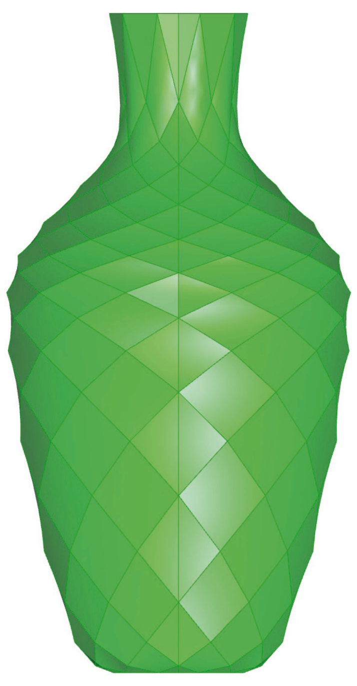


Parametric Vase by Julian Sterz

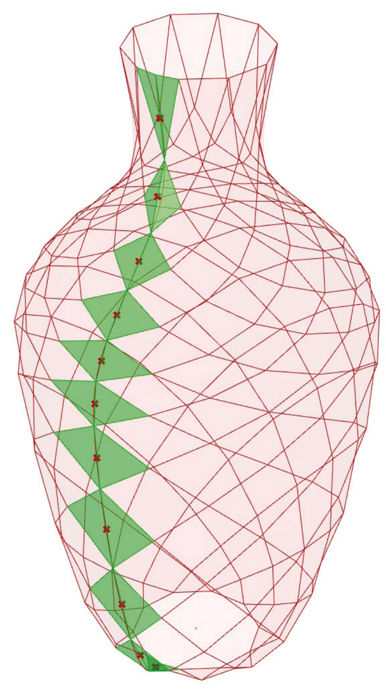
The idea of this parametric vase results of the desire to create an object of about 25-30 cm hight that can be produced on a 3D-printer with a max. hight of 16 cm (form 2).

These circumstances lead to the idea of designing a vase that consists of a bottom an upper part that can be assembled together based on the shape of their individual pattern.

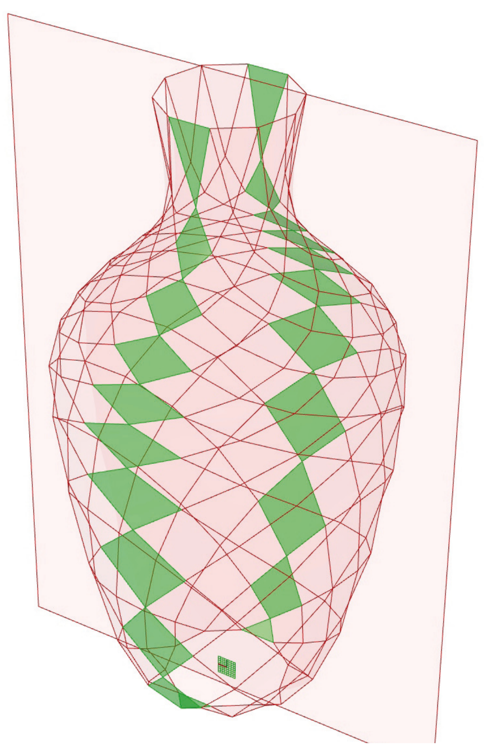
The form bases on a curve which is revolved around the z-axis to create an axially symmetric surface.



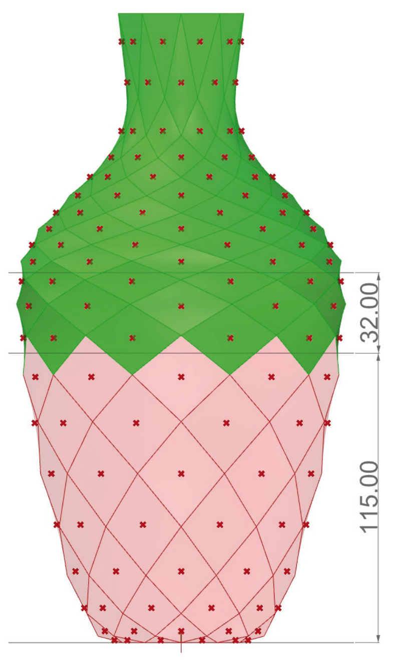
The later visible surface pattern has its origin in a diamond-pattern-component with appropriate U- and V-values to fit the desired needs.



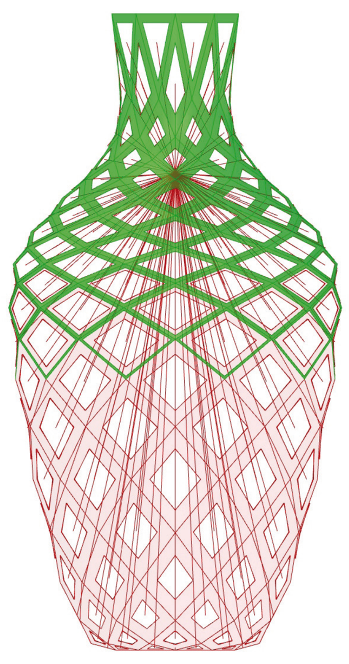
The earlyer Revolving of the curve around 360° creates a surface with a start and an end which is visible as a seam. This seam stays on the surface after the division into diamonds and triangles. Though this area of „broken" surfaces has to be identivied to get rid of it. This is achieved by creating straight lines close to the seam whose mid points match with the mid points of the edges of the broken surfaces.



After identifying the broken faces, they can be culled out and replaced by mirroring their equivalents from the opposite side of the vase.

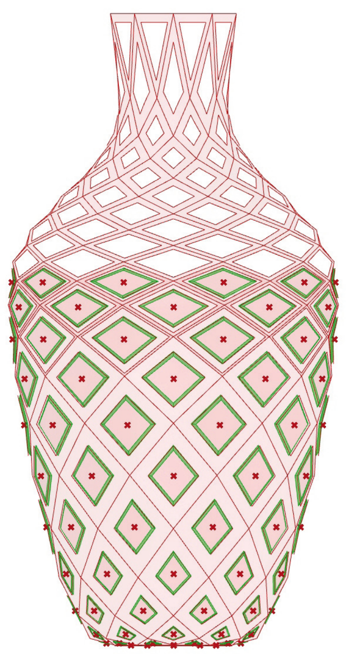


Now, that all faces of the vase are complete, the top and the the bottom part of the vase can be separated from each other. This can be achieved by dispatching all faces whose mid points are located above 115 + 32 = 147 mm (bottom of vase) or above 115 mm (top of vase). The overlapping of the two parts of about 32 mm is desired to reassemble them later.



In the next step all the faces of the bottom and the top of the vase get scaled to a smaller size. Each scaling is orientated to the center of each face and each scaling factor corresponds to the distance value of each face to one attractorpoint. The distance value gets remapped to defined values on a range from about 0.2 to 0.8.

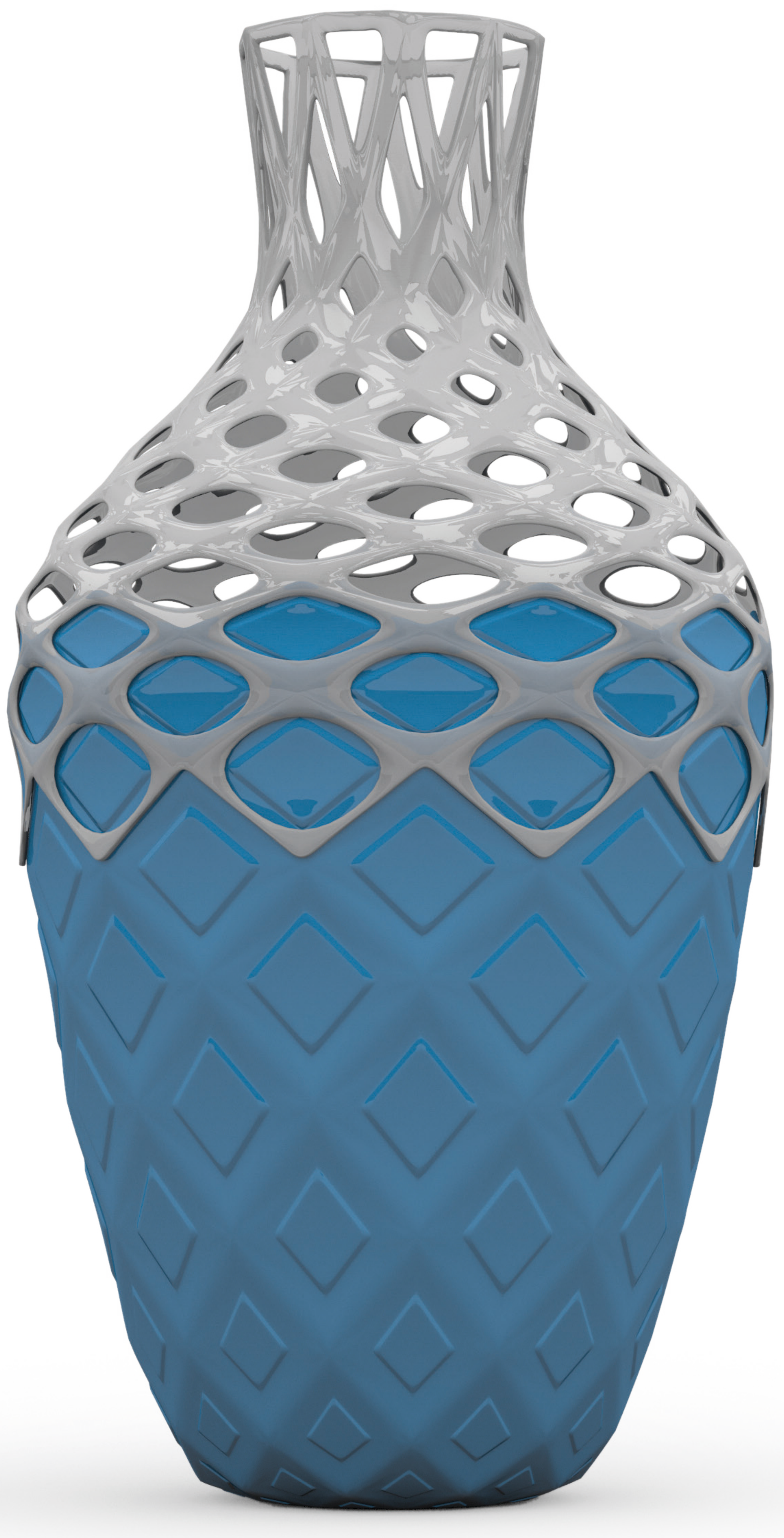
All the unscaled surfaces of the vase get split by their scaled counterpart. While at the top of the vase we only keep the resulted frames ...

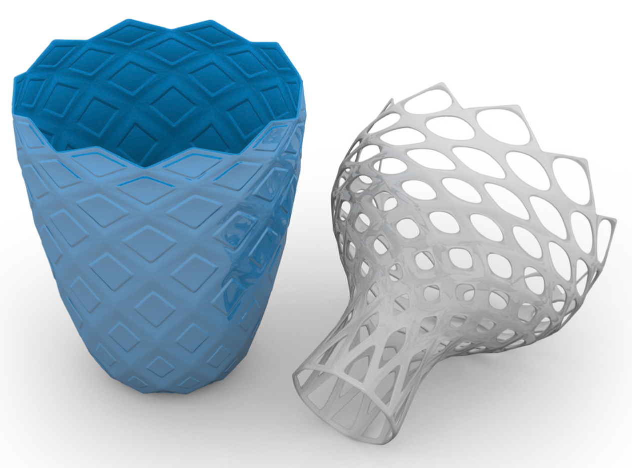


... all the scaled surfaces of the bottom vase are offsetted to the outside – again slightly scaled and further lofted to their remaining inner frames – to create a three dimensional surface.

This 3D surface of the bottom vase already fits (as a positve part) into the frame pattern of the top vase (as a negative part).

After creating and joining the upper and lower surface of the vase are converted into meshes. These meshes get thickened about 1.5 mm with a Weaver Bird (WB) component.
In the last step the WB Catmull-Clark-Subdivision-Component is used to smoothen both mesh objects. By accident it happens that the netlike structure of the top smoothes much more than the bottom of the vase which gives the object an interisting contrast.





Designed for:
Parametric Design Workshop
at FabLab Berlin
Instructor: Wassef Dabboussi
Summer 2018

www.juliansterz.com