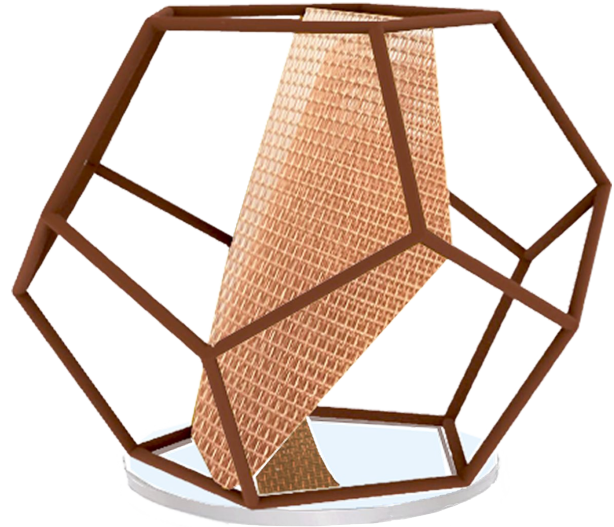
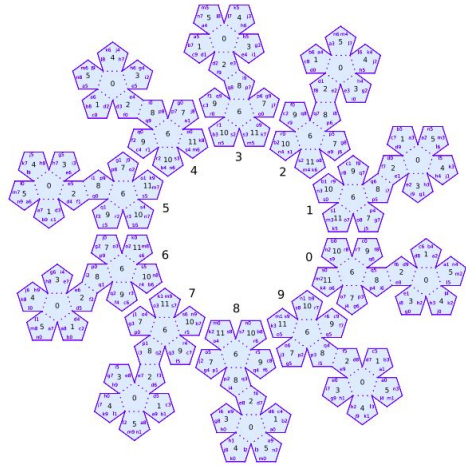

An Unexpected Journey

Lasiradio

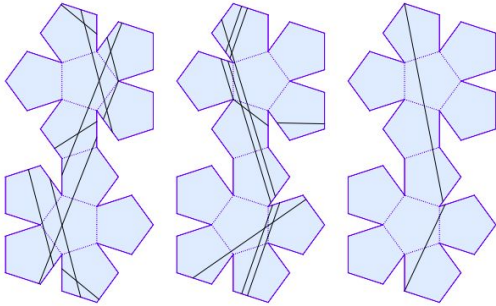
- Viljami Virolainen (contact person)
- Otso Hyvärinen
- Tom Henriksson
- Riitta Matikainen
- Lumi Alastalo





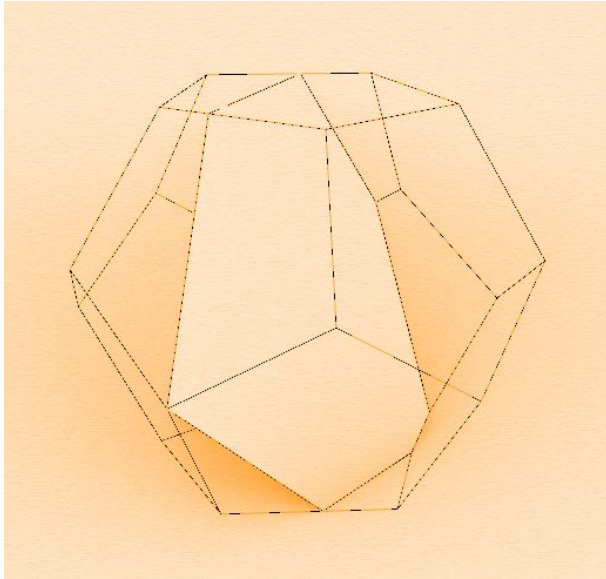
Mathematical stories we think are over, keep going... it turns out there's something new about the Platonic solids!

- Jaydev Athreya



As we saw before, Athreya et al. found something new about the age-old dodecahedron. However, mathematical solutions always create new questions!

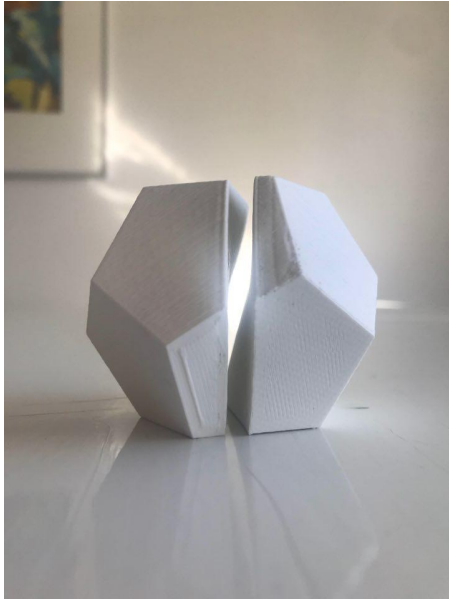
Statement



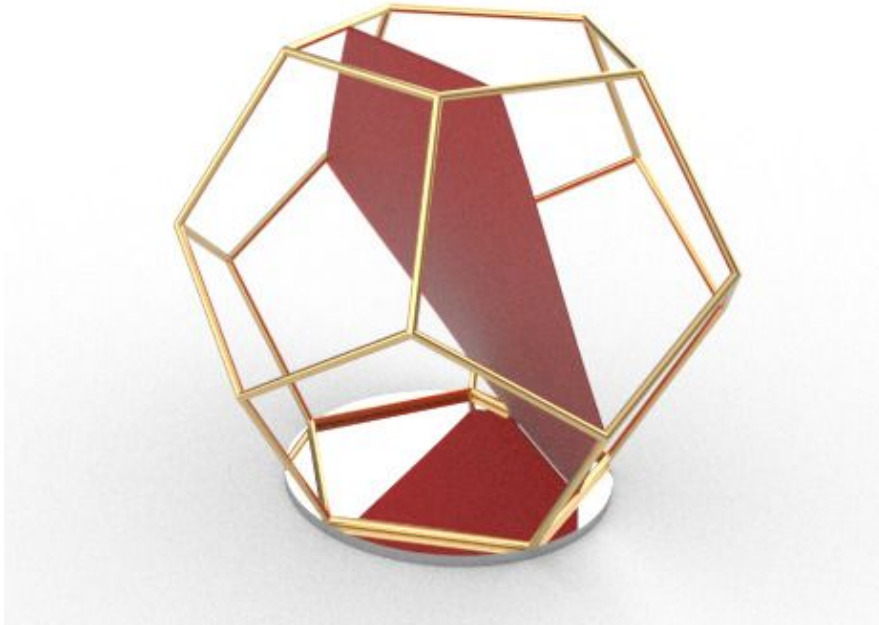
Taking the simplest path solution as a starting point, we explore what kind of a surface is created by the path and how the volume of the dodecahedron is divided.

Most importantly, however, we want to inspire the exhibition visitors to ask new mathematical questions

Early experimentation



Final idea

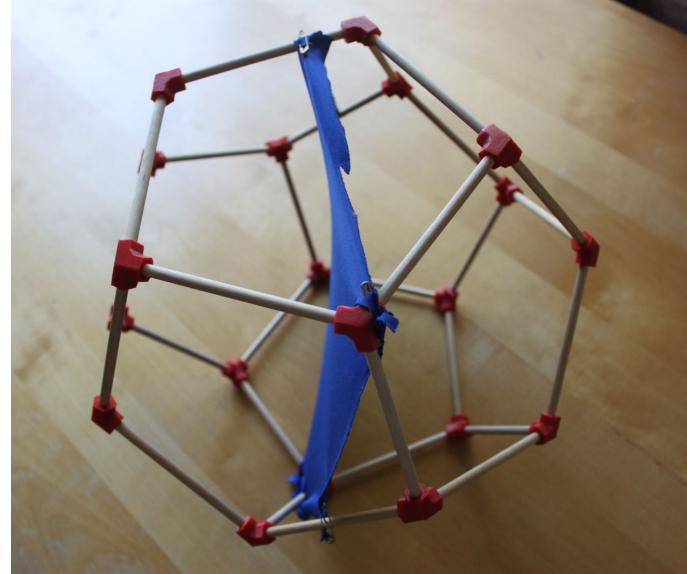
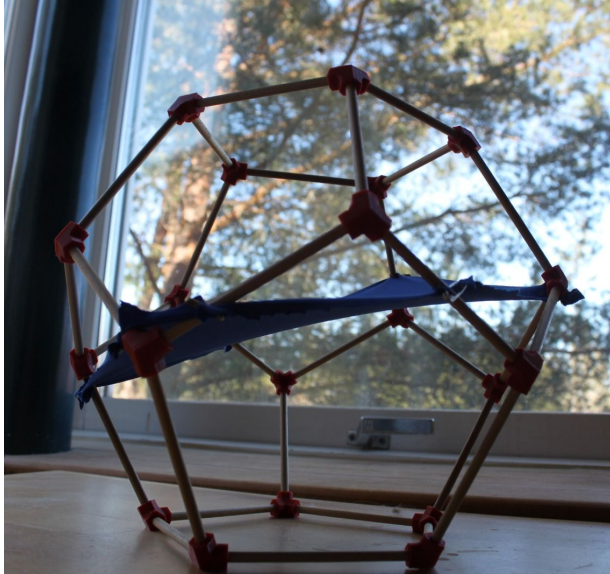


Height: 1.34 m

Edge length: 60 cm

Net area: 1.7 m^2

Prototypes (final skeleton model)

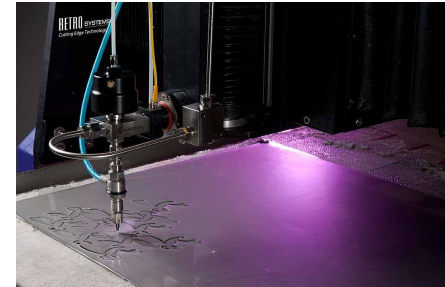


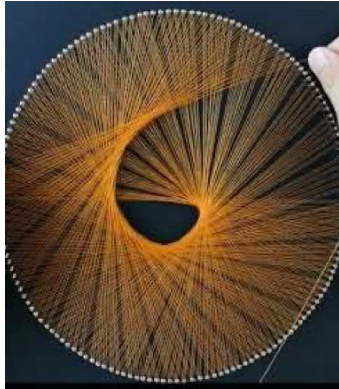
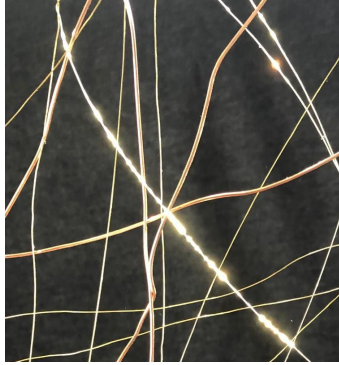


Implementation: skeleton

The skeletal dodecahedron is made of 12 pentagonal frames welded together. The frames are cut from steel plates with a water jet cutter at the Väre workshop.

Frames will be welded together into a dodecahedron at Arkkitehtipaja.





Implementation: net

The surface of the net is approximately 1.7 m²

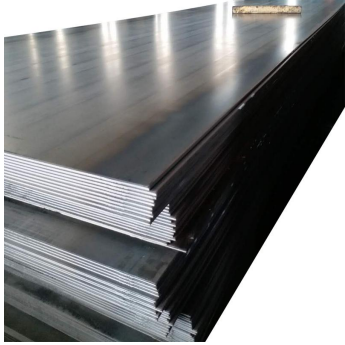
The net is constructed by weaving or stringing copper coated strings in the area delineated by the path solution, creating a doubly curved surface.





Implementation: schedule

- 19.4. – 25.4. Material orders, 3D models of skeleton & support prototypes
 - 26.4. – 2.5. Production of skeleton prototype, testing with surface thread
 - 3.5. – 9.5. 3D models of final skeleton & support
 - 10.5. – 16.5. Building the final skeleton
 - 17.5. – 23.5. Weaving the surface thread, placement at exhibition site
-



Final Budget

1) Skeleton

6 plates of (1m x 2m x 2mm) steel plus 2 extra (á=30-40 eur) ≈ 320 + 70 (additional costs, transportation) = 390 through Aalto. Each plate cut into two pentagon frames.

- construction + training ≈ 60 eur, support structures from wood for welding. Training can be done on the remains of the plates.
 - Surface Finishing ≈ 100 eur. (not decided yet. Reserved)
 - total of 450 eur + 100 reserved
-



2) Net

Surface area of the net $A \approx 1,70$. If strings are grid like with distance of 5 mm, it needs length of $A * 400m = 680m$.

- Copper plated welding string of diameter 0.8mm and length of 3.5 km costs 50-60 eur.
- other materials copper coated/copper material strings can be to little over 3 times more expensive
- total of 200 eur reserved, but realistic estimate under 100 eur.

Total: realistic estimate 550 eur + 200 reserved

Conclusions

We considered ordering the dodecahedron ready-made. However, it turned out it's much cheaper to do the skeleton (especially the welding) by ourselves at Väre.

Not only did this open up the possibility to use the budget on other areas, but it also felt like a fun challenge and an opportunity to show our artistic expression with welding.

We are looking forward to making the skeleton and beginning experimentation with the web-like surface!
