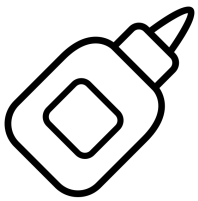
Time: 1-2 hr + drying time
Difficulty: hard

Upside down buildings

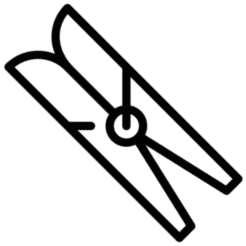
Hanging chains and fabrics was a favourite past time of many engineers, with the inverted shape highly efficient as a structural form. Many well known structures were designed this way from Sagrada Familia in Barcelona to countless bridges and other shell structures.

Materials required:

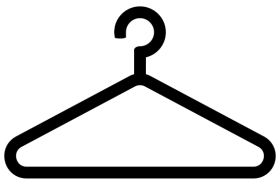
Newspaper



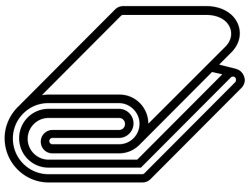
PVA Glue



Pegs



Coat hangers



Old sheet

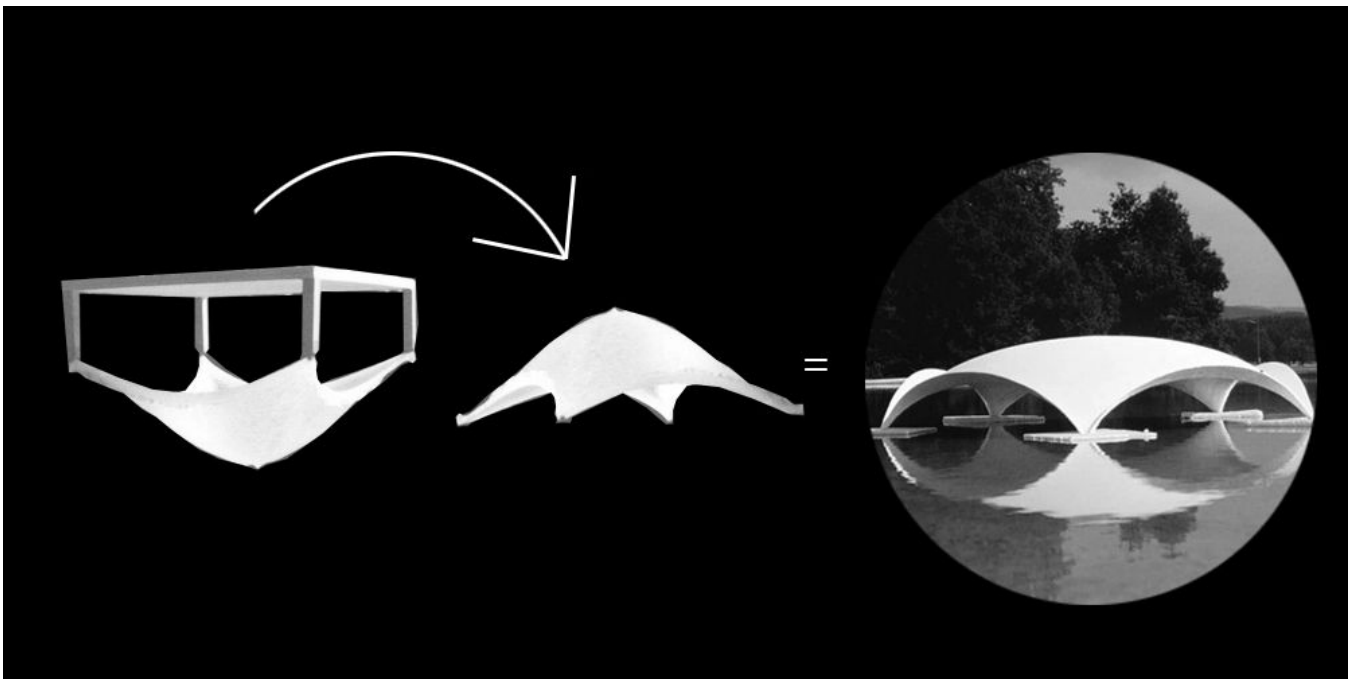
The challenge:

- Build a paper mache shell using the newspaper and glue by laying it flat on the old sheet and then with the fabric still attached, hanging the corners from your coat hangers (this might take some trial and error)
- Once the paper mache has hardened flip it over and you have your shell structure
- For some fun try testing how much load it can support, we suggest bags of rice or cereal.

The workshop demonstrates the form-finding potential of tension-only cables and fabrics to define the geometry of efficient compression-only structures by forming shells out of plaster. Different support conditions and loads are simulated to generate different shell forms.

Inspiration:

(Photos from previous Scale Rule workshops)



scalerule