Tent Structures

Special Load-bearing Structures
The material

- Textiles (natural):
  - animals and plants (in the old time)

- Technical textiles:
  - two (usually) directional woven textiles coated

- PVC+polyester fiber
  - cheap, easy to work with
  - sensitive for sunshine

- TEFLON+glass fiber (PTFE)
  - expensive, hard to work
  - shelf cleaner

- ETFE
  - only tension and shear
  - orthotropic material
Static

- membrane tension shear
- analogy reinforced concrete shells cable roofs
Static

• overdetermined structure
  analogy: catenary curve, funicular curve

• the design load: pre-tension
  soap film (minimal surface): the stress and the main curvature is the same in every directions
  Pelikán-membrane: same reduced stress to the plan
  or whatever you want...

szappan hártya

Pelikán hártya
Static

• life load (wind, snow and send)
  » double curvature

• other statically problems:
  fluttering (dynamic wind load)
  creep
  ice pond
Tensioned tents
Pneumatic tents
Cushion structures
Mixed structures

(the tent is only secondary structure)

• cable roofs

• rigid structures
Mobile structures
Cable edge
Rigid edge
Mast
Construction

- design
  - architectural concept
  - form-finding, patterning
  - strength check
- manufacturing
  - cutting and welding
  - other structures
- assembly
- maintenance
  - post-tensioning
  - cleaning
Színpadok
A tervezés