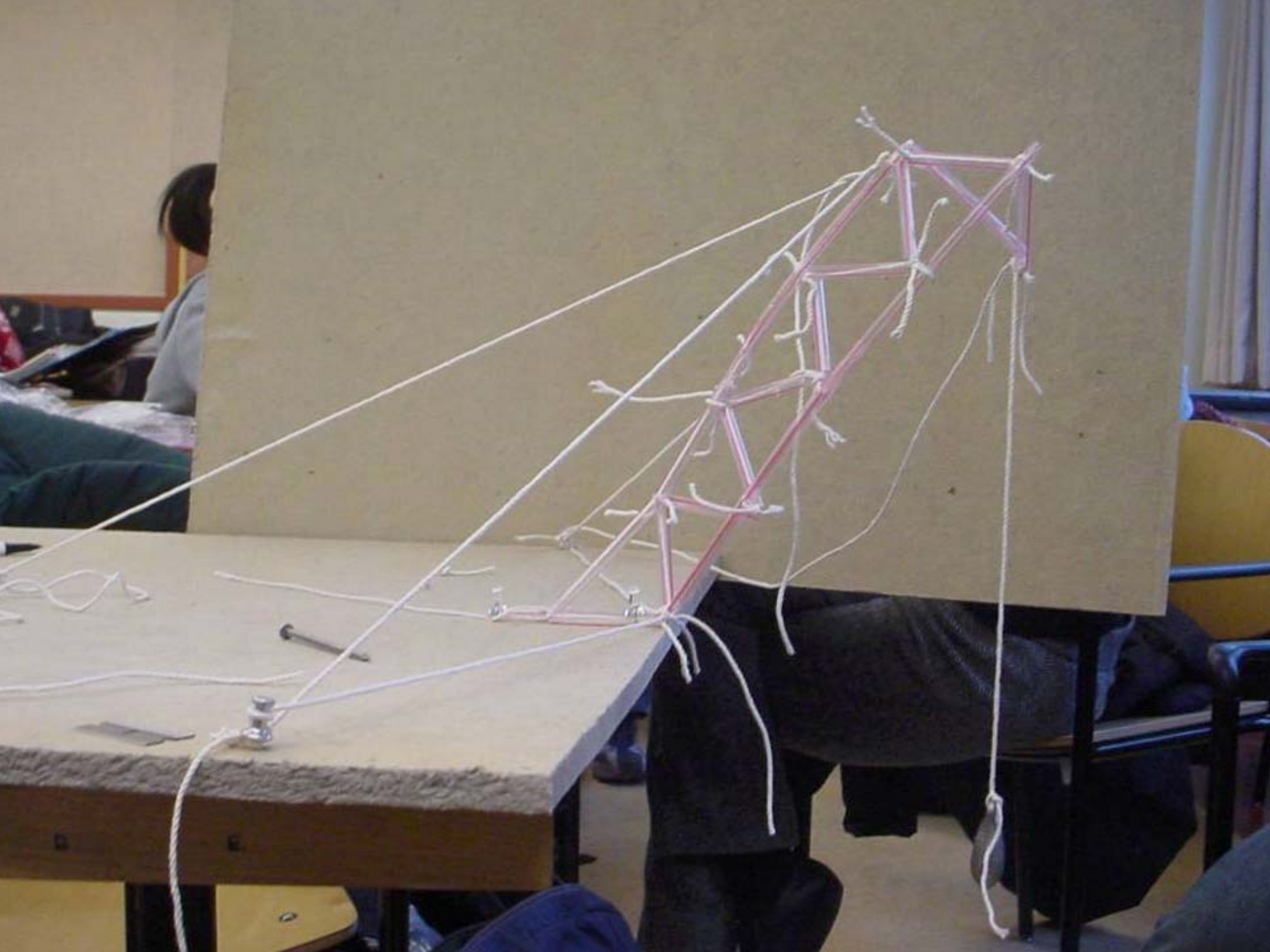
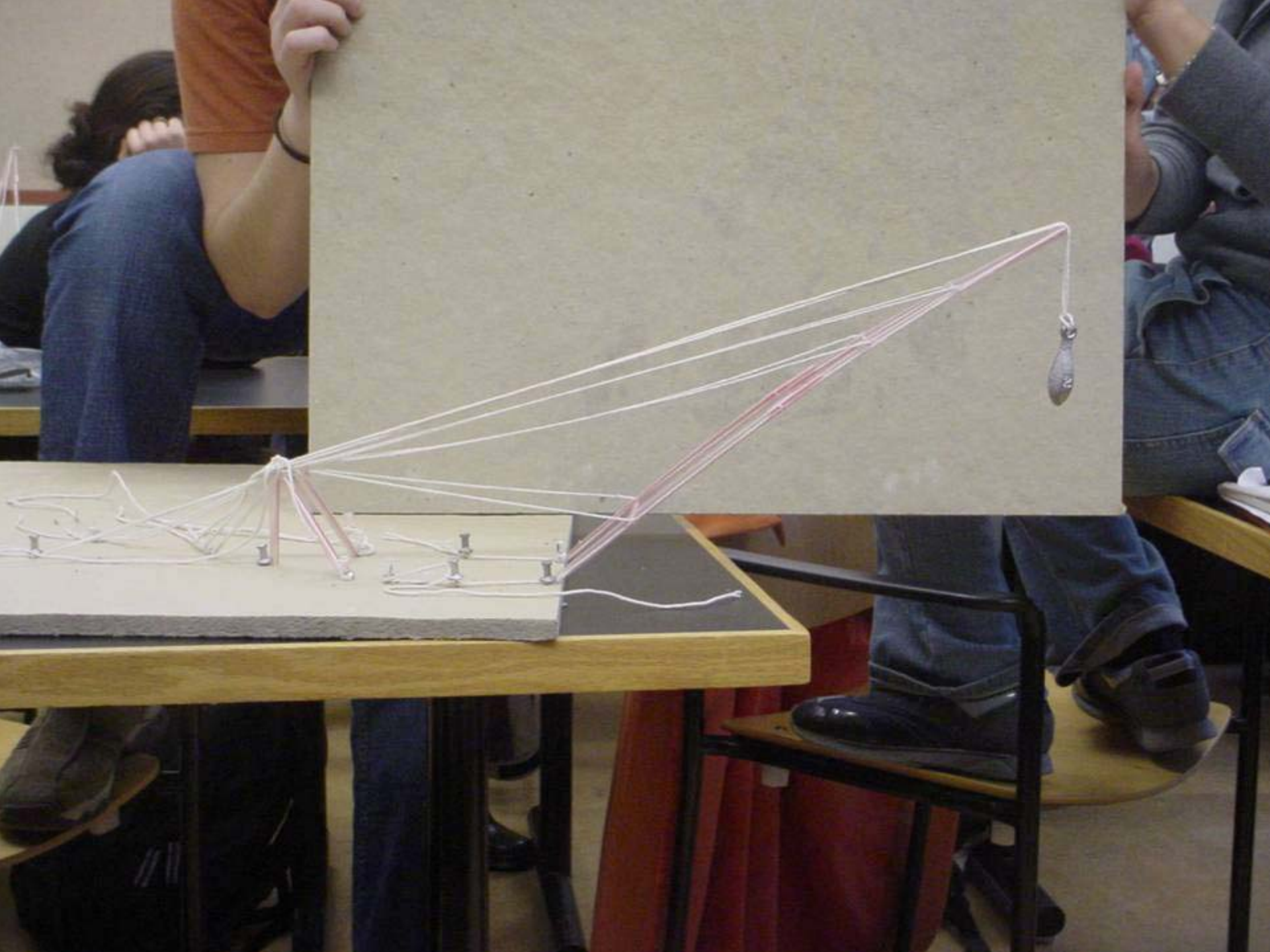
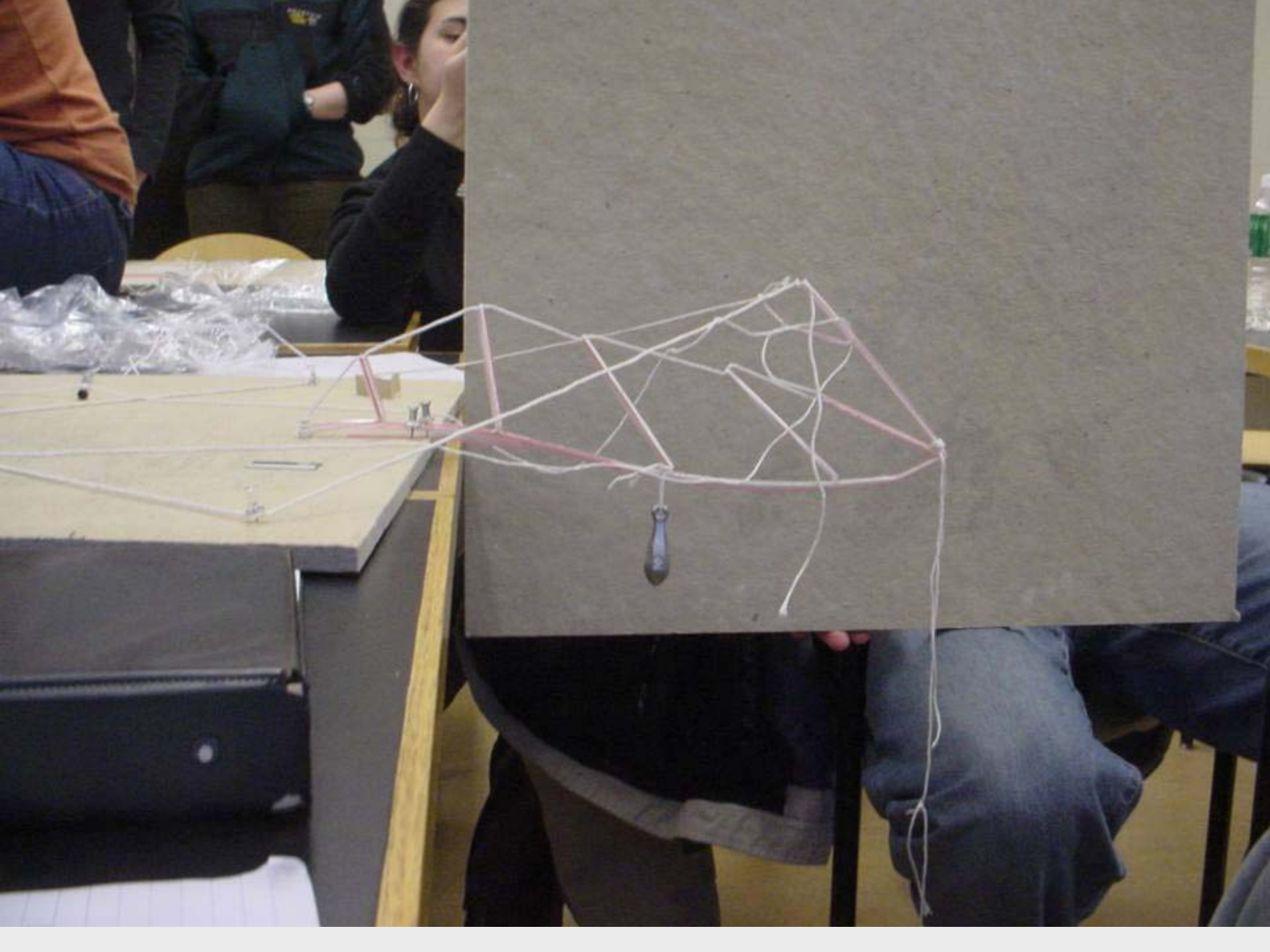


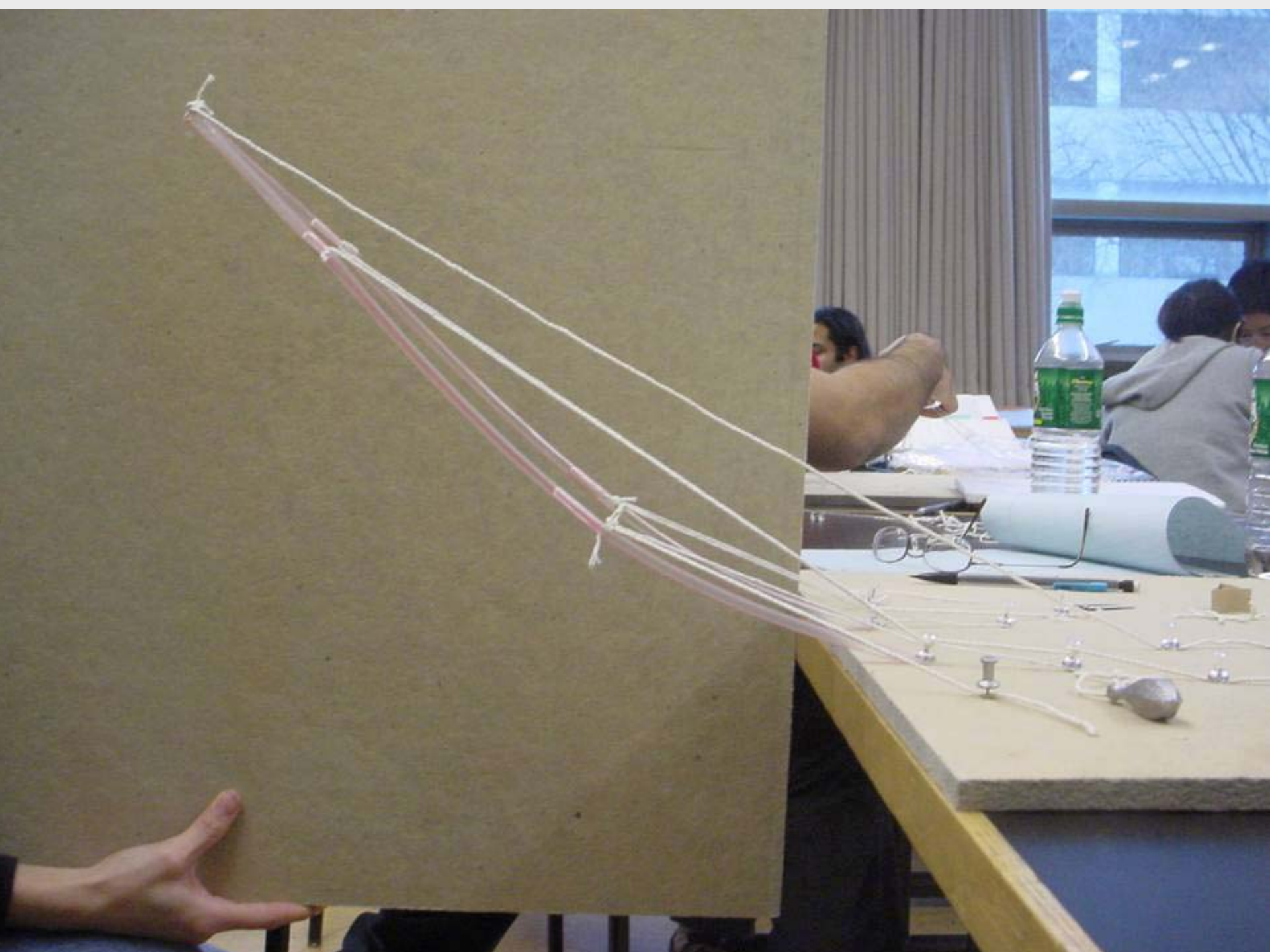
Tension Structures

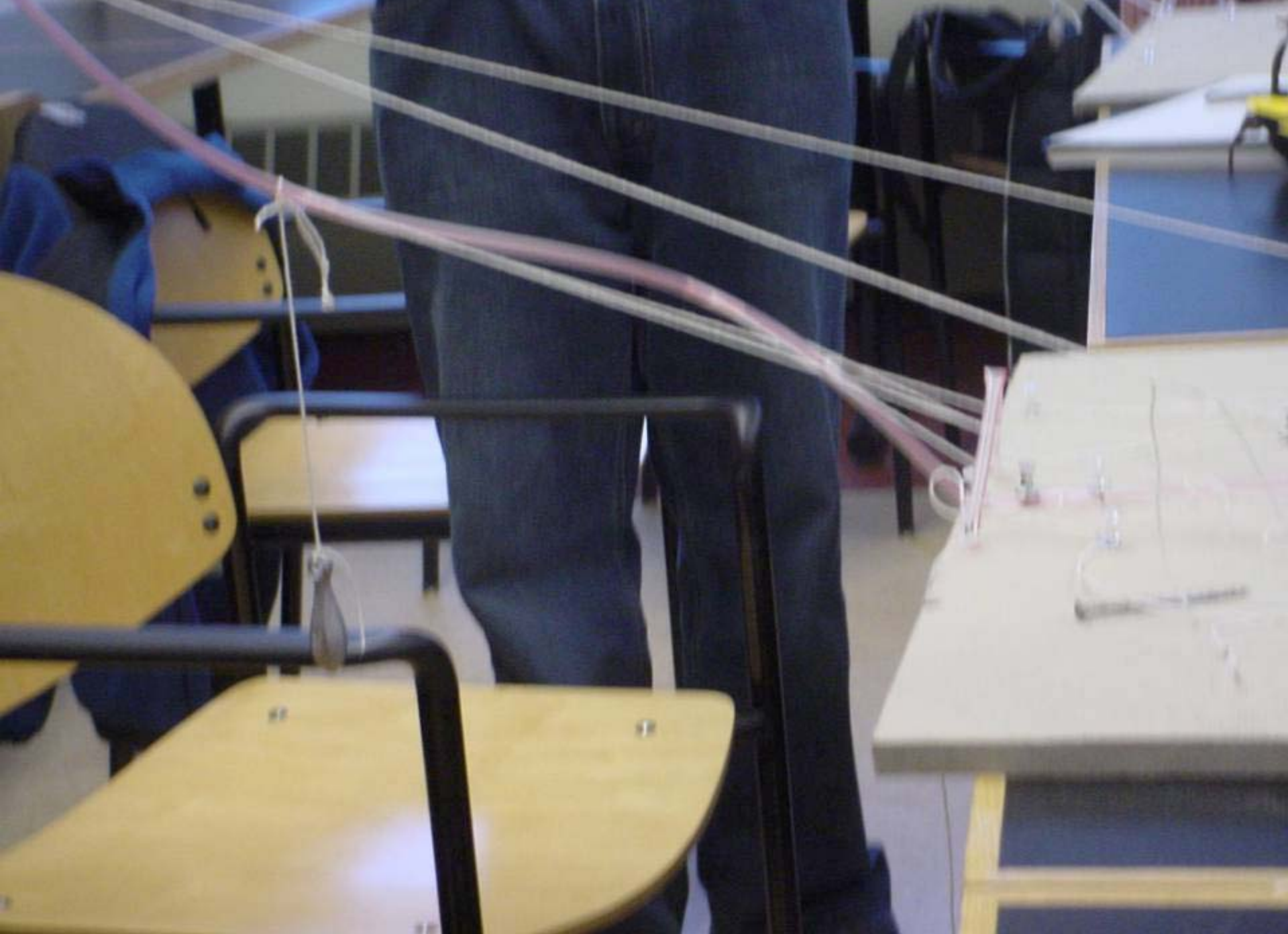
4.440 Basic Structural Theory

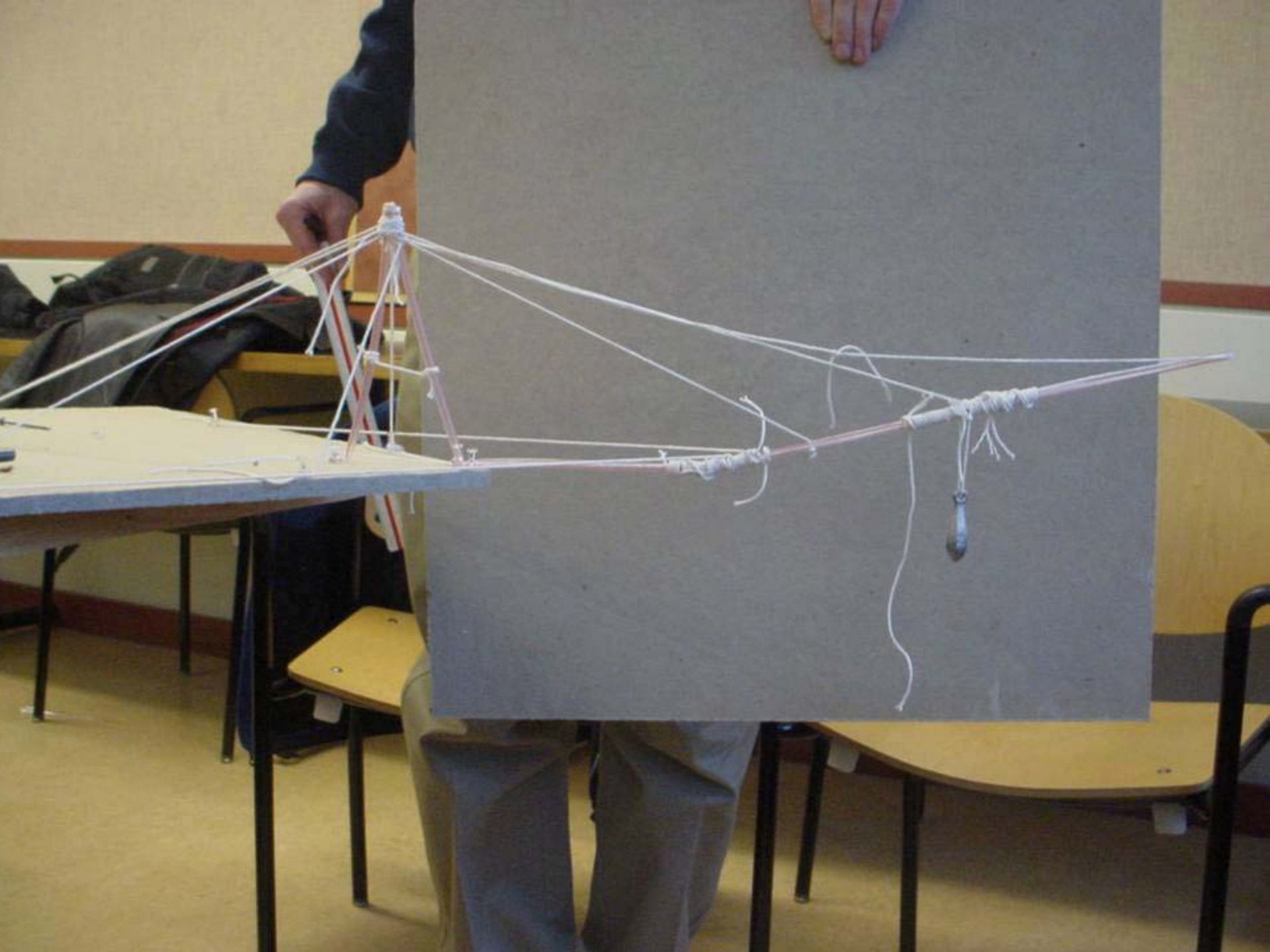






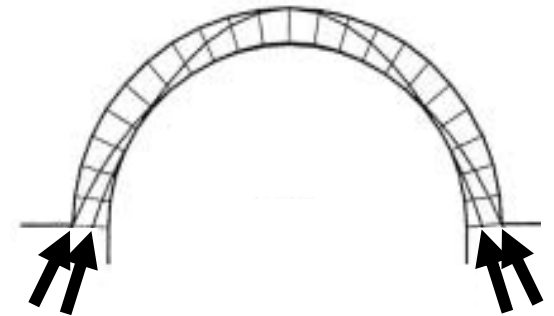
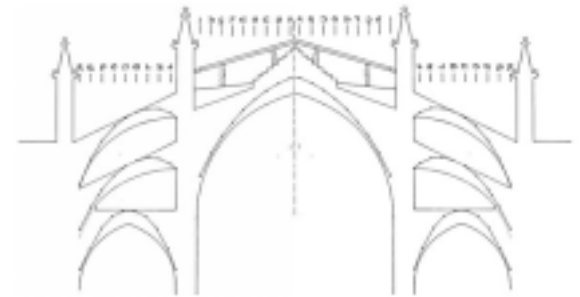






Review of Compression Lecture

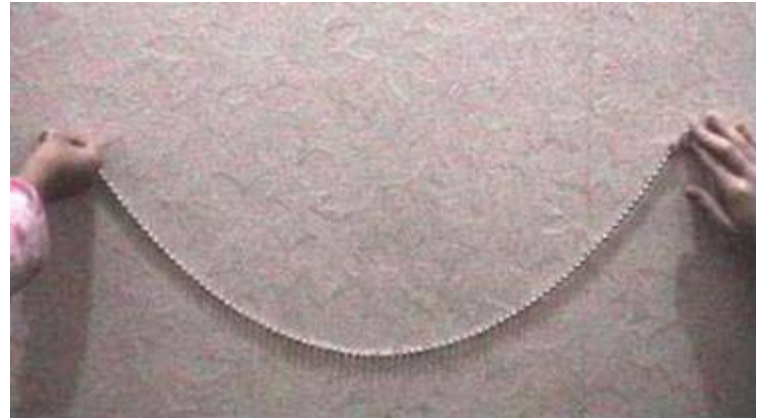
- **Masonry structures must contain lines of compression within the material**
- **Arches can provide a range of thrust values**
- **Efficient structures follow a funicular shape**



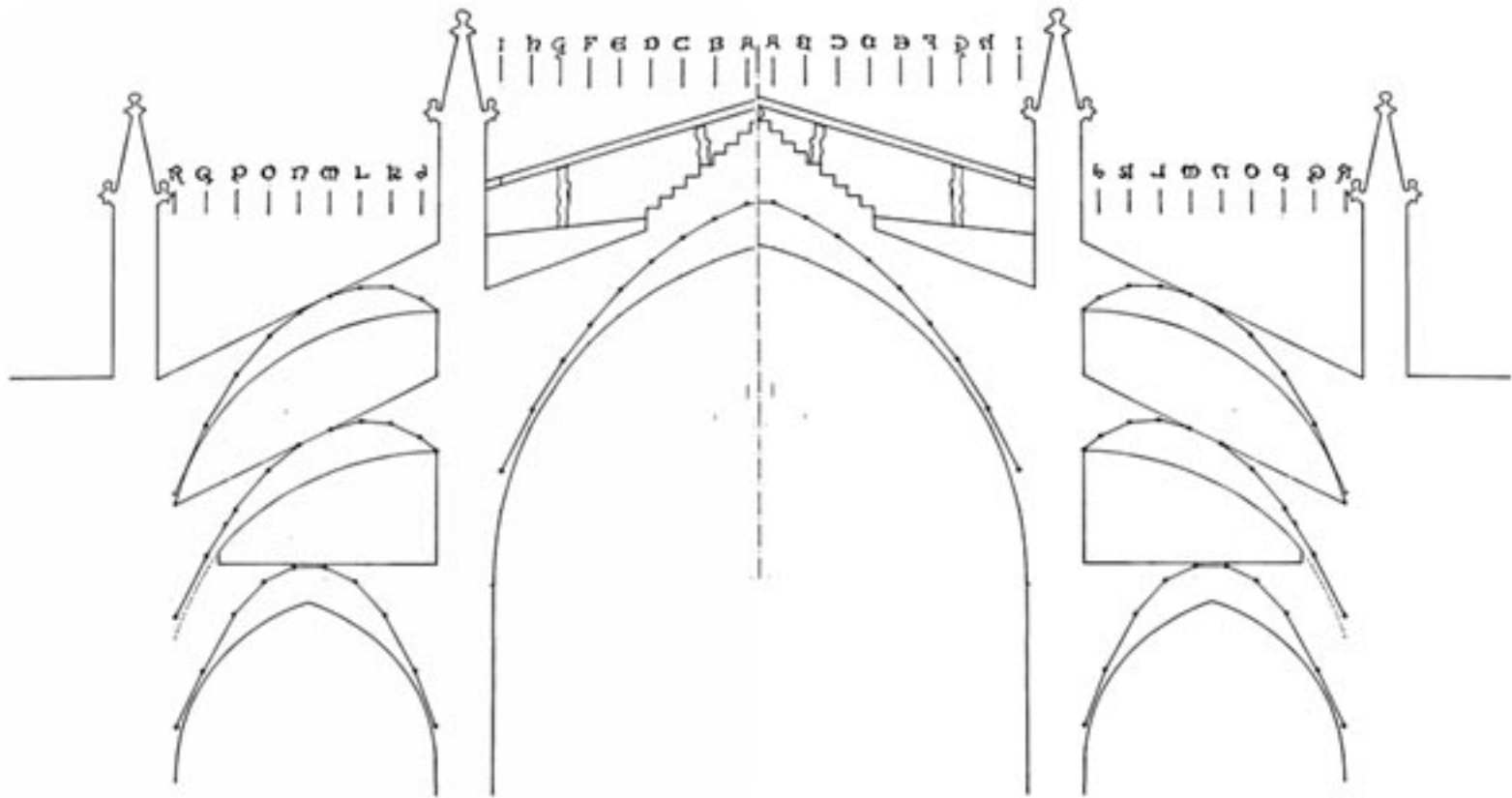
Hooke's "2nd" Law (1675)

*“ut pendet continuum
flexile, sic stabit
contiguum rigidum
inversum”*

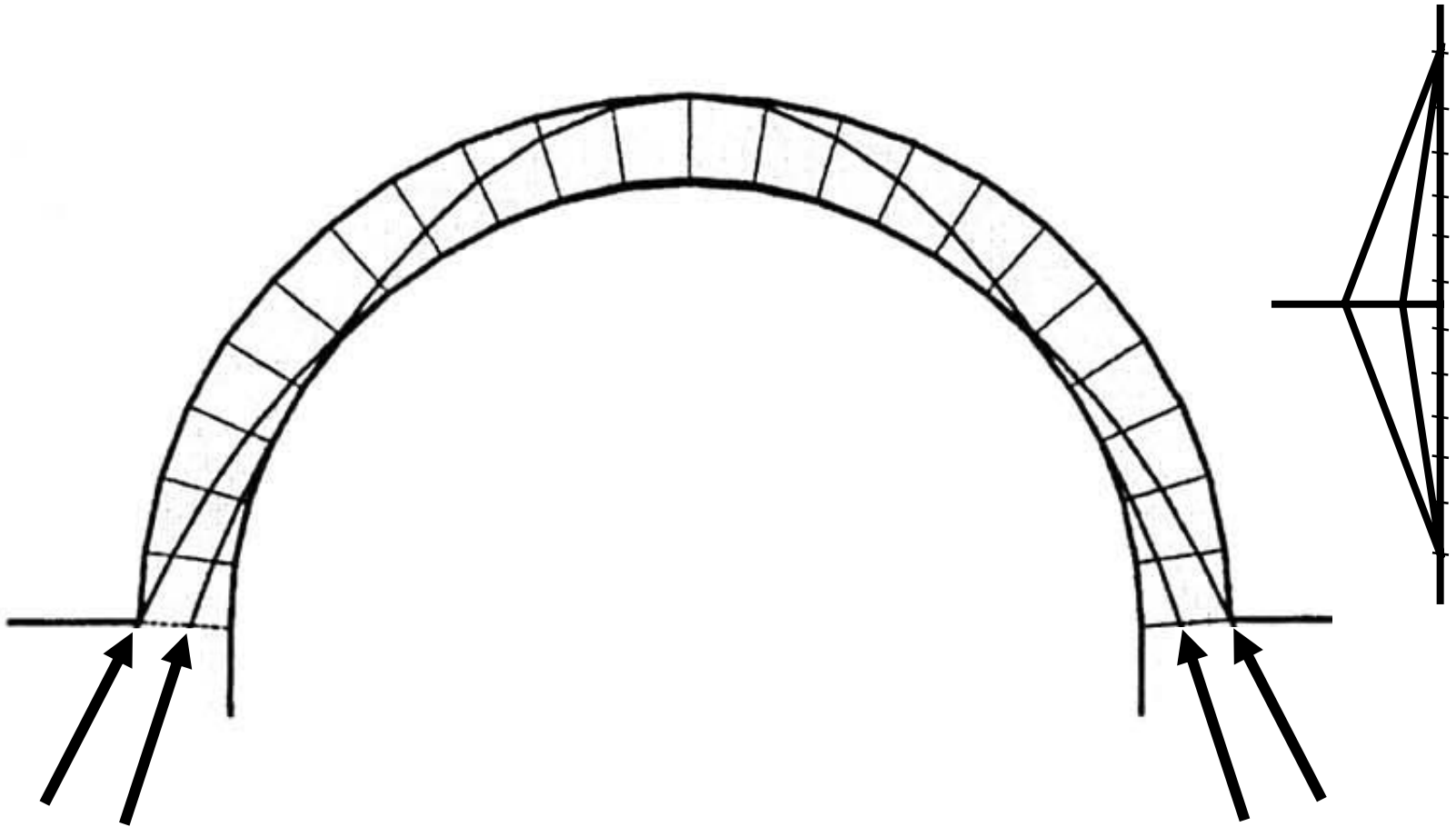
**As hangs the flexible
line, so but inverted
will stand the rigid
arch.**



Cathedral of Palma de Mallorca, 16th C Spain



Range of Arch Thrust



COMPRESSION

Tension Structures

- Tension structures must have a structural form: cables don't lie
- Due to their light weight and long spans, tension structures are susceptible to vibration and other dynamic problems
- For really long spans (like suspension bridges), the self weight of the structure is the dominant load